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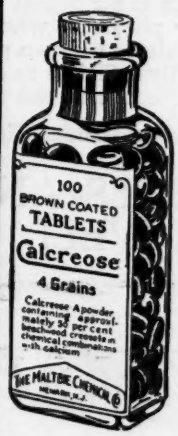
137 Miles



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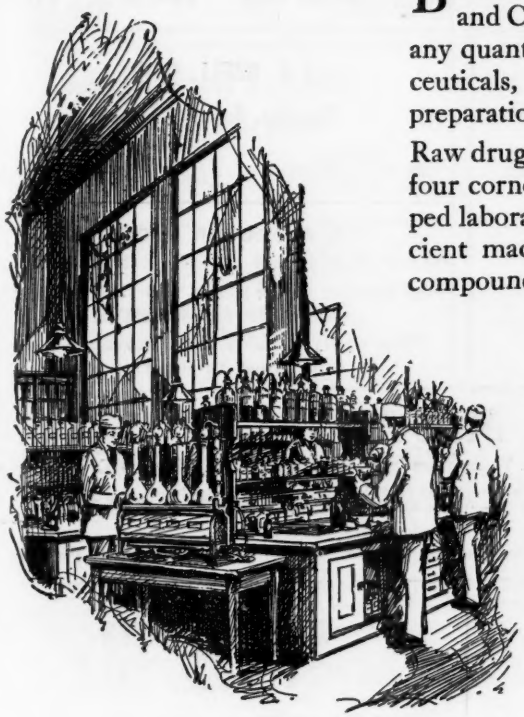

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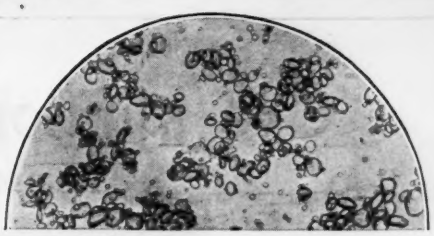
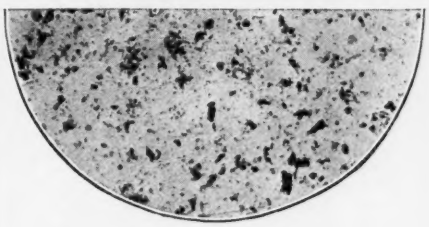


Food cells before and after steam explosion. Magnified 140 times



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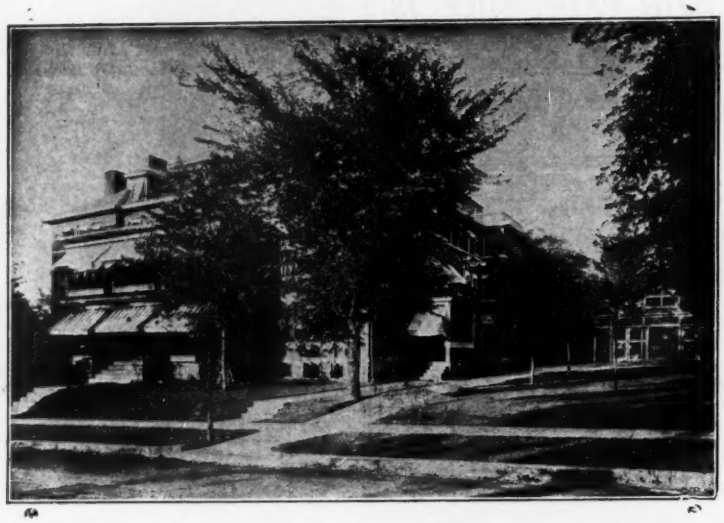

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FIRST of all, we must assure ourselves of the identity of the glands. The men employed in the big slaughter-houses who do the actual excision of the glands must give quantity production and cannot stop to identify anatomical structures which they are told to save. They work with great rapidity. We overcome the difficulty that that kind of production entails by employing experienced operatives who are expert in the identification of glands at sight; and whenever any doubt exists the material is subjected to a microscopic examination which makes the identity of the doubtful structure certain.

The glands we employ must be normal. It should be borne in mind that animals are subject to disease just as well as human beings, and that as a natural consequence animal glands are frequently abnormal. A notable example of this is sheep thyroids. We very frequently find them diseased in one way or another and unfit for use. Needless to say, all glands that show any abnormality are discarded.

It stands to reason that if extraneous material is not removed it will act as an inert diluent in the finished product. The glands that we use are, therefore, carefully trimmed to remove all non-glandular tissue that can be removed by this method.

In the case of fatty tissue, if it cannot be removed by mechanical means because of the fact that it is distributed throughout the structure in the gland, it must be removed by chemical treatment. And this chemical treatment must be of unusual delicacy because of possible injury to the active substance that might otherwise result.

We make a painstaking selection of the proper part of the gland to be used in our products. In the case of some of the glands, such as thyroid, we use the whole gland, but in others, such as the anterior lobe pituitary, posterior lobe pituitary, corpus luteum, and ovarian residue, only a part of the gland must enter into the process, and in these cases the dissection is made with the utmost precision.

There are in general two kinds of tissue in every kind of glandular structure—connective tissue and parenchyma, the latter containing the active part. After the glands are dried the parenchyma is reduced to a very fine powder, but the connective tissue is more resistant to the powdering process and retains for a time its threadlike form and consistency. If the connective tissue is finely powdered, as it undoubtedly is in many laboratories, it increases the yield of inert material. Not content to do this, we diminish the yield and further increase the activity of our products by passing our desiccated material through sieves, allowing the finely powdered parenchymatous substance to go through and eliminating the remnants of the inactive connective tissue.

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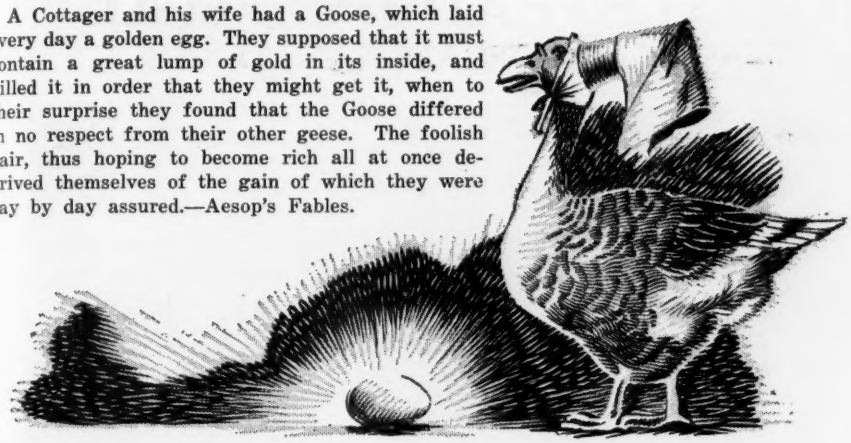

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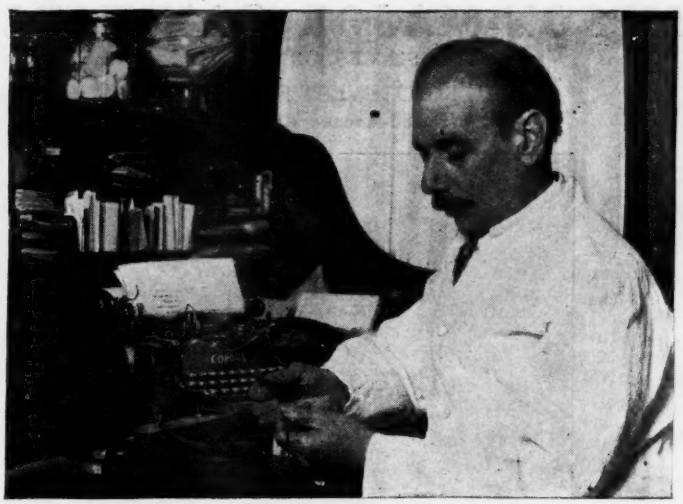

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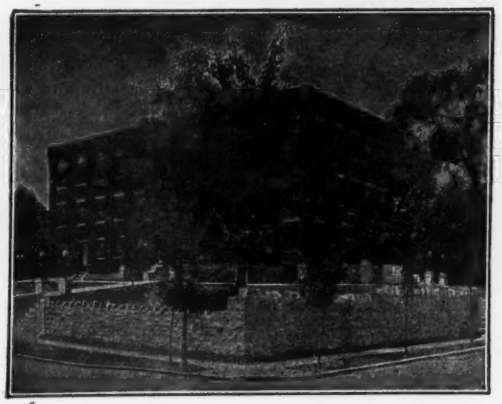

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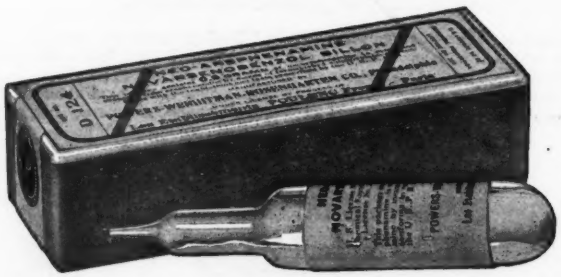

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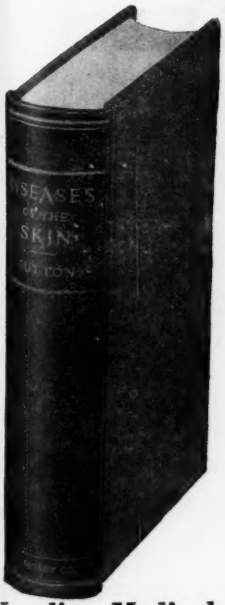

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Arterial Hypertension

LINDSAY S. MILNE, M.D., Kansas City, Mo.

Read at Annual Meeting of the Kansas Medical Society, Kansas City, May 2, 1923.

Arterial hypertension, one of the commonest of disorders, has been the subject of very voluminous literature and much medical thought for close upon a century, yet unfortunately, the majority of these studies have advanced but little its etiology, significance, and treatment.

Since the days of Richard Bright in 1836, who observed the cardiac hypertrophy and dilatation occurring in chronic nephritis cases various observers who followed him have considered hypertension and cardiac hypertrophy the result of chronic nephritis. Taube, following him, considered that the hypertension was due to the contraction of the renal blood vessels and consequent cardiac hypertrophy necessary to drive the blood through the kidneys to maintain renal function. Ewald and Potain extended this, in that they believed there was a general vaso-constriction due to an irritated kidney reflex. This obviously cannot be the entire cause as there are often observed cases of extreme cardiac hypertrophy and hypertension even in children with little or no evidence of renal involvement. Mahomet, noticing cases that had hypertension even for years before any renal disorder became evident, described what he called a hypertension prealbuminuric state of Bright's. Albutt, in more recent years, found many so-called prealbuminuric Bright's cases with hypertension, which never developed any nephritic signs, even until the time of death. Janeway, in 458 cases of blood pressure over 160, found 116 with neither albumin nor casts, such cases by various authors being described as "benign" or "essential" hypertension, "hypertensive cardiovascular disease," "hyperiesis," etc. The pivotal idea has always been that a diminished excretory activity of the kidney results in efforts intended to restore the normal renal function, amongst these being an increased arterial pressure. In animal experiments it has been demonstrated that reduction of the kidney substance does to some extent increase blood pressure, yet in ligation or complete obstruction of the ureters, where the irritant especially affects the renal tissue, this does not particularly occur. A similar example is found in the chronic obstructive prostate case; the blood pressure may rise to some extent and is often relieved after the introduction of retention catheters. Yet the rise is not proportionate to the degree or duration of obstruction and may not be evident at all. The fact that hypertension is an effort to increase renal function can hardly be substantiated, as it can be shown that the hypertension does not increase the circulation through the kidneys but actually hinders it, and also, as Shackleford and others have shown, that the urinary output as well as a diminution of the albumin and casts is often accomplished by lowering the pressure. It has to be granted that, although certain forms of degenerative nephritis are not associated with any elevation of blood pressure and cases are on record with very high creatinine, blood urea, uric acid, etc., with no hypertension, and equally so cases of hypertension where these metabolic products are not increased, yet possibly in some cases of nephritis there may be a retention of substances of uncertain chemistry which could cause a generalized vascular spasm and hypertension.

Of greater importance than the kidneys is the part played by the blood vessels in the production of hypertension. The systolic pressure is determined by the heart beat and the diastolic pressure by the tonicity of the arteries and arterioles and probably the capilaries. In any rigid system of tubes open at one end, attached to a pump, in the intervals between the pumping pressure there would be no diastolic pressure. Such a situation is approximated in arteriosclerosis where the blood vessels lose their elasticity, contractility and tonicity and consequently the diastolic pressure falls below normal and the systolic tends to rise. In former years hardening of the arteries was considered as one of the main causes of hypertension yet now we know that extreme arteriosclerosis, especially if only in the larger vessels, may exist with little or no change in blood pressure.

Alterations in the compressibility of the arterial wall as induced by arteriosclerosis are of no great importance as it can be shown that in arteries removed from the body and containing a known fluid pressure, extreme

arteriosclerosis in itself only raises the compressibility some 10 mm. at most. When the tonicity of the arteries is increased the diastolic pressure must rise, for the blood column is under greater tension, and it follows that the systolic pressure must rise to maintain the circulation. This has therefore been considered the essential cause of hypertension and as such the systolic and diastolic pressure should rise and fall together. Variations, however, from this do occur and are divided roughly into three groups:

1. Cases of high systolic pressure and low diastolic (230-80), dependent on an increased force of the heart and where the pressure is lowered. It is mostly observable in the systolic drop. Such condition occurs in high grade arteriosclerosis with well compensated cardiac hypertrophy.

2. Relatively slight systolic increase and a high diastolic pressure (170-120) where there is necessarily marked disfunction of the arteries and the heart not involved at all, or failing.

3. Where systolic and diastolic are both high (230-140), where both heart and arteries are involved, as in certain cases of primary spasm of the arterioles and secondary cardiac hypertrophy.

In reviewing the pathology of hypertension cases it can at least speculatively be considered that in some cases of nephritis there may be metabolic substances retained in the system that cause a general vaso-constriction, raising the diastolic pressure, and in due proportion as the heart also is stimulated or becomes secondarily hypertrophied, the systolic also is raised. It is equally certain that many other factors can be responsible for hypertension, and it may be produced in either of two ways; one, where some degenerative process affects the media and subendothelial connective tissues of small arterioles, as for instance some infection either acute, as in diphtheria, tonsillitis, or various fevers, or more slowly from some focal infection, as in chronic tonsillitis, or dental sepsis or the ingestion of various chemical vascular irritants. Another method whereby vaso constriction is caused may be shown to act through the nervous mechanism of the arterioles and capillaries, as for instance, in the case of hyperthyroidism. After hypertension has existed for some time it also appears certain that the strain on the vessels further causes a degeneration and fibrosis in their walls and so adds arteriosclerosis, or, as it has been sometimes called, arterio-capillary fibrosis, to the pathologic findings. Just when this occurs after hypertension is somewhat uncertain although it has been considered as occurring in a maximum of 5 years. The secondary changes in the kidney noted in arteriosclerotic cases may exist either as some fibrosis in the walls of the glomerular vessels or in various stages to the contracted, so-called atrophic or granular contracted kidney, so often mistaken by pathologists for a primary chronic nephritis. Later changes also occur in the heart vessels and are followed by cardiac weakness, auricular fibrillation, ventricular extra systoles, or other conditions associated with cardiac failure. Similar changes in the brain can cause the various cerebral symptoms so commonly noted in the termination of hypertension cases. The majority (approximately 50 per cent) die of cardiac failure, about one-fourth die of cerebral conditions, brain oedema, hemorrhage, or other results of arteriosclerosis, and the most of the balance die of uremia. Janeway's statistics were: Cardiac, 46.7; uremics, 22.6; cerebral, 14.6; yet now we know that many so-called uremics were really conditions dependent on cerebral vascular conditions. This vascular process can be extended to include such organs as the pancreas, where similar atrophic processes can be observed pathologically, and may be in such degree as to be responsible for the incidence of a lowered sugar tolerance and increased blood sugar, and the various grades of diabetic conditions not uncommonly noted in the course of hypertension cases.

Similar effects due to the contraction of the smaller arteries may eventually produce the picture of the so-called albuminuric retinitis. Indeed, the condition of an individual's arteries may first be demonstrated by the opthalmologist, and similar arterial changes involving the nutrition of the different organs may well account for the varies symptomatology of hypertension and arterio-sclerotic cases.

In 1916 Weiss described an interesting method by which the circulation in hypertension could be studied and which has produced some results. He observed the capillaries under the nail matrix under the microscope and noted that the capillaries were elongated and tortuous and often particularly branched, all of which indicated vascular obstruction—a very different picture from the normal as also from the dilated capillaries in a cardiac stasis case.

In studying the clinical course and pathology of hypertension cases, a large percentage can definitely be shown as the vascular results of infective processes. Also the therapeutic results of removal of the infective focus may, by its prevention of the spread of the disease, permit of improvement or even clinical cure. These infections may, of

course, also be the cause of some nephritis, but the resulting elevation of blood pressure is, for the most part at least, from the generalized vascular lesions, and the renal condition and urinary findings only part of the general picture. Various poisons such as lead, arsenic, etc., have to be classed in this group. Syphilis has been an interesting study for some time, many believing it an important factor. It is true syphilis produces profound lesions in the blood vessels, especially the large ones. Its distribution, however, is usually patchy and observed in the larger vessels and, although hypertension cases sometimes do have positive Wassermann reactions, yet syphilis, in proportion to its relative frequency, plays rather an unimportant role in the etiology of hypertension.

Passing from those cases where the primary condition has been an actual disease of the smaller arterioles and capillaries, there is also a group, apparently the most benign form of hypertension cases and those in whom we hope most for real cures, where there is a primary spasm of the arterio-capillary system. This primary spasm of the arteriole may of course also be complicated by some degree of actual vascular sclerosis occurring coincidentally. The result of various infections but if allowed to persist, will or may be followed by the secondary arterial changes as in the first group, and with the same terminations as regard the heart, kidneys and brain. In this group are the various endocrin cases.

Hypertension often occurs in hyperthyroidism which in itself may probably not be a cause but may act through the medium of adrenal or pituitary or sympathetic nerve stimulation. It is interesting to note in autopsy work how often the adrenals are actually, sometimes markedly, hypertrophied in hypertension cases. Syphilis and various other diseases may cause an adrenal hypertrophy and perhaps by its pathological effects, which have been several times noted on the adrenal, can cause the occasionally noted co-existence of lues and hypertension. The influence of the adrenals has often been considered in connection with hypertension. Experiments have been conducted with injections of adrenalin and it has been noted in rabbits that serial injections were followed by a degree of arteriosclerosis. As against this, however, it has also shown that rabbits often show arteriosclerotic changes in cases having no adrenalin, and it has also been considered that adrenalin or impurities in it act as toxins producing degenerative changes in the small blood vessels. It has been shown that injections of adrenalin usually raise the blood pressure, especially so in hyperthyroid cases, yet peculiarly enough and a fact difficult of explanation (as the works of Girou and also of Izquiziero have shown) that in hypertension cases adrenalin actually, and often markedly, lowers the blood pressure. It may be that in hypertension cases, as in asthma, the effect of sympathetic stimulation may tend to balance the pressor effect on the blood vessels and so lower the pressure. A very frequent type of hypertension is found in climacteric cases, many women and some men apparently developing often a high degree of hypertension at this time. There is in these cases generally no evidence of nephritis, no impairment of renal function at first and often for years, and perhaps never. They may be due to ovarian, or corpus luteum atrophy, being succeeded by a secondary pituitary and adrenal hypertrophy, or possibly to various metabolic changes we are not familiar with. It seems certain, however, that in many cases injections or administrations of corpus luteum or ovarian extract may be followed by very beneficial and more or less lasting reductions of blood pressure, often surprisingly so. In this class of essential hypertension may perhaps also best be put those cases apparently due to worry and mental strain, a surprisingly large group in these strenuous days. These cases also may act through an endocrin dyscrasia but seem in many instances to be markedly improved if not cured by rest and cessation from worry. Indeed, psychotherapy in its broadest sense, by inspiring hope and installing confidence and by cultivating in the patient an ability to realize the future with equanimity, may oftimes achieve some real results in the treatment of hypertensions, especially where a nervous etiologic element is considered, and is to some extent beneficial in all.

It can easily be demonstrated in almost any case that rest alone will lower the blood pressure, and limitation of at least strenuous exercise with intervals of rest is a constituent element in the treatment of all cases. For years and still, to some extent, excess protein foods and their derivatives were considered to be the cause of hypertension. Patients were advised to take no meat, or only in very sparing quantity. It was shown by Mosethan, and it seems to prove to be a fact that protein values, in varying quantities from 125 to 50 grams in equal caloric daily diets, can be given to high blood pressure cases with no alteration in the blood pressure whatever. It may also be a fact that where no meat or proteins are taken the individual becomes anemic and loses vitality and in this way the pressure falls, but if at this expense it is sometimes hardly worth while. It is true that

in nephritis cases the protein intake should be held within reasonable bounds yet in the average hypertension case, especially those not related to primary nephritis cases, a normal balanced ration free from irritating extracts or purins which might themselves damage the blood vessels, is most reasonable. The heavy cereal diet usually prescribed for hypertension cases often succeeds in producing obesity, a factor in itself tending to cause cardiac hypertrophy and hypertension.

In policythemia there may be some little hypertension and various workers have attempted to show that increased viscosity of the blood was the cause of hypertension. These have never been really substantiated although certain cases of hypertension with plethora, many due to failing hearts, are vastly relieved from time to time by having some blood removed.

In 1904 Ambard and Beaugard, and later Allen and others, suggested that salt retention is the cause of hypertension. It is true that in certain types of nephritis and in cardiac cases with oedema salt administration increases the oedema, yet apparently as regards the hypertension there is no relation to salt intake. Mosethaul, for instance, has shown that large quantities of salt can be taken with no variation of the pressure and that the chloride content of the blood bore no relation to the degree of hypertension.

Miller and Williams showed that when great quantities of water were taken there was some rise in the blood pressure and limitation of the water intake has been current practice in the treatment of hypertension, yet up to fifty per cent of the blood volume can be injected intravenously with no special change in the blood pressure. Foster and Davis studied twenty-two hypertension cases with reference to the urea excretion after administration of various quantities of water. Urea was somewhat diminished when the water intake was below 1000 but at 2000 c. c. daily, nitrogen excretion was at its maximum and the excretion of nitrogen often even more than the intake.

Hypertension is apparently not necessarily a compensatory factor that cannot be dispensed with or interfered with, and patients may be just as comfortable with a lowered pressure as with a high one and, although this has been a subject of much controversy, we are entirely at liberty, and it should be our effort, to lower the pressure as nearly to normal as possible. It, of course, might also be said of hypertension (as it does in some cases cause no symptoms), why try to reduce it? This latter procedure is extremely necessary if we study the future results of such cases.

If any conclusions can be drawn from these studies they are that hypertension is usually a symptom of some generalized cardio-vascular disease in the nature of some degree of increased cardiac force which may be purely cardiac or associated with either some spasm or sclerotic condition of the arteriocapillary system. Even in nephritis, although some retained metabolic process may in itself cause hypertension, yet the same processes causing the nephritis may by their action on the blood vessels more definitely cause the hypertension associated with nephritis. The extent, therefore, of the damage to the arteriovascular system as a whole determines those hypertension cases which sooner or later improve or recover or remain permanent. It is also of the utmost importance to discover the hypertension case early in its career and so ward off, if possible, the usual consequent secondary arterial changes and their effects on the systemic organs.

Further, also, the etiology of the hypertension must be estimated, be it from some toxic cause, some endocrin or neuropathic disturbance, or on the basis of nephritis, and by appropriate remedial measures attempt at least an arrest of the progress of the disease.

The height of the blood pressure is not an indication of the amount of kidney involved, but is essentially an evidence of the degree of involvement of the arteriocapillary system. Hypertension is not necessary to maintain the circulation through the kidneys or other tissue, and every effort should in moderation be made to lower it and maintain it at a lower level.

Having determined the cause of the hypertension and the extent to which it has caused secondary systemic changes, a rational dietary calculated to support the nutrition and strength of the individual should be adopted, in addition to the necessary limitation of exercise and various hygienic, psychopathic, eliminative, hydrotherapeutic, electrotherapeutic, and sometimes surgical remedies, administered to combat the etiologic factors involved and to lower the existing state of hypertension and so at least prevent the incidence of the serious terminal events of this disease.

The Anemia's

J. L. Lattimore, M.D., Topeka

Read at Annual Meeting of the Kansas Medical Society, Kansas City, May 2, 1923.

The topic "The Anemia's" could cover much ground and yet bring out nothing of interest, so in this paper I will only take up and discuss briefly some of the salient features from a comparative standpoint of three

types of anemias that we meet with rather commonly in our practice.

Certainly it is true that we are recognizing more cases of anemia than formerly, whether it is because we are now closer observers, whether the patients come earlier or whether laboratory aids give us an insight to the condition, matters little; it is a fact that we see more, rather recognize more, anemias than formerly. Due to these facts probably all combined, we are obtaining a higher percentage of cures in the secondary anemias, while in the incurable anemias we are getting a longer period of prolongation of life with the attendant comfort and ease.

Pernicious anemia, with our present knowledge an incurable, fatal disease, takes the leading role of the different types of anemia. The mode of onset, by the very nature of the disease is slow up to a certain stage, at which time the patient is conscious of the fact that something is radically wrong and then consults the physician. It is a difficult thing to say whether the blood changes are the earliest symptoms or the spinal cord changes. I have examined patients that show very definite general blood changes, yet showing no spinal cord involvement of pernicious anemia, while on the other hand many cases present as the first noticeable symptom the cord involvement. For the greater percent all cases presenting themselves for diagnosis and care have already undergone considerable general blood changes and a careful search will reveal a certain amount of sclerosis of the cord, evidenced by numbness and a tingling sensation in the fingers, hands, toes, etc. Other conditions associated with pernicious anemia are achlorhydria and glossitis.

The laboratory findings, which I think are of value and an aid in the diagnosis of pernicious anemia, are about as follows: A low erythrocyte count with a relative higher hemoglobin, giving a color index of one or above. A comparatively new technique, developed by Dr. R. C. Hayden who will open the discussion of this paper, is the volume index of the erythrocytes. This test depends upon the fact that red corpuscles of pernicious anemia are of greater individual thickness than the normal cell. So if a known number of units, ranging around 1000 units, ment in a centrifuge tube, after rotating in a centrifuge for a certain length of time at a given speed, the same number of red cells of a pernicious anemia will give a higher measurement. Of course the patient having anemia will have fewer than normal red cells, so it must be determined by count, and from this figure, merely figure in proportion. True, this test is of no value in cases that present a high leucocyte count, as in leukemias, neither do we need it, for the differential count will divulge the condition. To me the only factor that would cause a slight variation would be in cases where there are a great number of large megaloblasts, but it is an easy matter to ascertain this condition by the differential count.

A study of the bile pigments, to me, has been of little assistance. I have used the Schneider technique and have a series of 62 cases. Urobilinogen shows as a rule a high number of units, ranging around 1000 units, but two cases gave only 75 units, one gave 123 and the third gave 156 units. Taking as the hypothesis that bile pigments are directly proportionate to the hemolytic activity, it would be very hard to explain some of my results. Urobilin is also usually increased, about 500 to 1000 units being normal and as a rule pernicious anemia cases give from 1000 to 3000 units. In two cases of pernicious anemia the urobilin results were normal. In my opinion the bile pigments may give some aid, but certainly too much dependence should not be placed upon them.

As to treatment I have nothing new to offer, merely briefly enumerate some of the therapeutic measures that help. All focal infection should be removed. Neo-salvarsan intravenously has greatly helped some cases I have studied and brought them up to a good condition for a certain period, then the remission, and after repeating this same round for two, three or four times the patient fails to respond, just as they do for transfusion, iron, etc. Later in this paper I will discuss splenectomy in pernicious anemia, in connection with the discussion of other anemias.

The most common error in the diagnosis of splenic anemia, earlier in the disease, due to the marked anemia, is the diagnosis of the condition as pernicious anemia.

Splenic anemia is characterized by an enlargement of the spleen, a marked intercurrent anemia, ascites and gastro-intestinal hemorrhage. The pathology of the spleen in this condition is a generalized fibrosis, a degeneration of the Malphigian corpuscles, an endophlebitis and later on, an enormous enlargement of the spleen.

The physical findings early in splenic anemia are often very confusing because of failure to palpate the spleen. It has been my experience that the spleen must almost double in size before it can be palpated, because of its peculiar anatomical location. Due often to our failure to palpate the spleen, finding no other physical findings, except a marked anemia, we make a diagnosis of pernicious anemia. Here, I would be guided by a low

color index, normal volume index, normal platlet count and a normal bile pigment estimation. Of course, the most uniform laboratory finding in splenic anemia is a low leucocyte count with a relative lymphocytosis.

The functions of the spleen are probably not known in full at present, but some of the function are well established. For example, the removal of certain cellular elements from the circulation, often the spleen's capacity is not sufficient to care for this function, so the balance is sent on to the liver, where they are either destroyed or changed into energy producing bodies. A function that apparently greatly concerns the anemias is that function of breaking up of certain red cells and this function is increased as fibrosis progresses. The spleen acts also as a filter, removing from the blood stream bacteria in certain diseases, such as syphilis, tuberculosis, typhoid fever and other toxic conditions. From the spleen these substances pass on to the liver and produce the condition that commonly is known as cirrhosis.

Other conditions which give rise to an enlarged spleen and which must be differentiated from splenic anemia are malaria, syphilis, chronic sepsis, lymphatic leukemia, Gaucher's disease, splenomedullary leukemia, however most of these can be eliminated after thorough physical and laboratory findings.

As to treatment there is only one thing if a cure is to be expected and that is removal of the spleen, which also will be discussed later in this paper.

Splenomegaly of the Gaucher type is met with in young subjects. It is a slow growing condition, sometimes running a course of as yong as 20 years. There develops after so long a time a secondary anemia, very slow in progress, while the spleen in proportion gradually grows larger. The pathology of this type of spleen appears to be a primary endothelioma of the spleen.

Coming now to the treatment side of these three anemias. In one condition, pernicious anemia, removal of the spleen appears at present to offer the longer life, with better health than any other therapeutic agent. In the last two conditions removal of the spleen is the cure. Many advance the theory that removal of the spleen may interfere with internal secretion. I would like to know if the spleen has any internal secretion. If it has it certainly differs from all other organs of internal secretion in the fact that it has very little connection with the sympathetic nervous system, while all organs of internal secretion upon which we are versed at present are extremely closely related to the sympathetic nervous system. The two organs most commonly affected in these anemias are the liver and the spleen, the liver is an organ essential to life while the spleen is not. Just what part the spleen plays in pernicious anemia I do not know, but certainly its removal seems to give better and longer relief than anything we know about at present. There are some cases that undoubtedly were pernicious anemia, giving both the blood and cord changes, that have apparently remained cured for a period of as much as 6 or 7 years. Apparently, the best type of cases to get the best results from are those where the spinal cord does not show too marked involvement, while the erythrocyte count is above 2,000,000 cells per c. mm. Transfusion is the best and quickest method of putting the patient in an operable condition.

Both in Gaucher's disease and splenic anemia transfusion and other therapeutic measures must be resorted to, in order to overcome the severe secondary anemia and bring the patient up to an operable condition. In these two anemias the best results are obtained from cases operated upon while at the peak of or just following transfusions, giving a good red count.

The results obtained have been very pleasing and, as we are learning to raise the standard of physical requirement for operative cases, the mortality rate is greatly lowered in splenectomies. Splenectomy in some way produces a very profound reaction within the bone marrow. Leucocytosis persists for a comparatively long period of time with a great number of normoblasts and megaloblasts. In many cases, 2 and 3 normoblasts are found to each leucocyte. Satisfactory explanation of this change is impossible, nor is the increase in either normoblasts or megaloblasts, or both, an indicator to the patients condition, for some cases present great numbers of these cells and do well following splenectomy, while others present very few, and one does as well as the other.

The findings at operation are varied in these conditions. Some cases of pernicious anemia show an enlarged spleen while others do not. Always in splenic anemia and Gaucher's disease, there is a marked enlargement of the spleen, it weighing from 500 to 2000 grams. Other than the spleen, no other pathology is found in pernicious anemia. In splenic anemia, especially later in the disease, there is a massive net work of blood vessels and fibrous tissue, binding the stomach and spleen to the diaphragm.

Brief summary. Pernicious anemia is an incurable condition.

Splenic anemia and Gaucher's disease are cured by splenectomy.

No particular condition of the patient having pernicious anemia would cause a favorable prognosis.

The blood changes of pernicious anemia are more general than specific.

Symptomatology and Diagnosis of Acute Poliomyelitis

C. F. MENNINGER, M.D., Topeka.

Read before the Shawnee County Medical Society, August, 1923.

Acute poliomyelitis is an acute infectious disease, practically impossible to distinguish in its initial stages from any other of the acute infectious diseases of childhood. Many cases will have the appearance of an acute gastro-intestinal disturbance, others of an acute infection of the upper respiratory tract, a tonsillitis, or a naso-pharyngeal inflammation. Flushed face, increased frequency of respiration, elevated temperature, headache, vomiting, pain on swallowing, and perhaps diarrhoea, will therefore be the sick picture observed in the large majority of cases of acute poliomyelitis during the first few days of the disease.

INADEQUATE HISTORY

If we would save ourselves from painful humiliation by recognizing the disease in the preparalytic or initial stage, it becames necessary to uncover symptoms more characteristic of this disease. In the absence of an epidemic of this disease, we are, as a rule, not likely to give enough consideration to the fact that there is an occipital headache, or a nape ache, or a mild rigidity of the neck muscles. Nor will enough significance be attached to such psychic phenomena as irritability, resentfulness, an expression of whining discontent or an excitableness. Yet these are the keynote symptoms that arouse our suspicion of acute poliomyelitis when there are other cases in the community.

EPIDEMIOLOGICAL TYPES

To have a clearer understanding of the true nature of this disease it will be well to digress here to speak briefly of the most common types in which this disorder appears. The most frequent group is called by Draper the *dromedary group* because there are two distinct periods of illness separated by a period of wellbeing. During the first period of hump, which is the initial illness, the symptoms will be those of a fever plus the complaint of the part involved—a gastro-intestinal or a tonsillar or an upper respiratory passage inflammation. After a remission of all symptoms, varying from a few hours to several days one of two things will happen, namely, the patient promptly gets well or the second hump appears and there is a relapse of all symptoms plus a cerebro-spinal involvement. The second type known as the *straggling group* has no intermission of comparative wellbeing. There is a gradual and sustained illness of varying intensity culminating in an involvement of the cerebro-spinal tract. The third or *sudden onset group* has the nervous system involvement right from the start. (Figure 1).

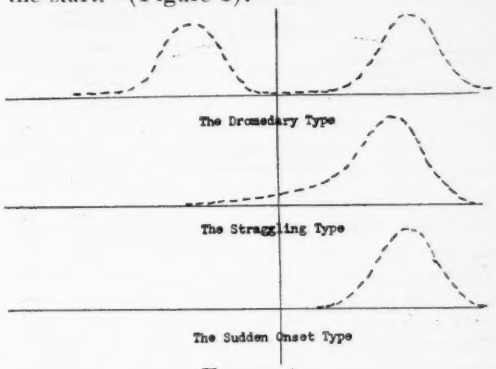

FIGURE 1

It is to be noted that this disease may last from a few hours to many days and that the intensity of either phase may touch the extremes of violence or of such mildness as to escape detection. Besides this simple classification by Draper there are those of other students of this disorder. Because of the large amount of original pathological and clinical work done by Wickmann, his classification should be studied if it is desired to gain a real knowledge of acute poliomyelitis. It will not be possible to enter into this in this short paper.

Having digressed enough to get a comprehensive view of the types or groups in which the disease makes its inroads upon the people, we will now return to take a more detailed look into the various stages.

PRODROMAL SYMPTOMS

Wickman has observed that although as a rule poliomyelitis begins in an acute manner, yet there are now and then cases with distinct prodromal symptoms preceding from several days to a week the acute onset. These prodromal symptoms are characterized by a general feeling of being sick without any definitely well marked symptoms. No doubt these cases belong to the straggling group of Draper.

REMISSION AND RELAPSE

As before mentioned the disease manifests itself often in two stages, so that after the first attack, which lasts several days, a new attack appears. Frequently this renewed attack appears as a relapse. After the first

attack the patient has recuperated sufficiently to be up and perhaps at work when he is again stricken with the second attack, which is often more severe than the first. (Figure 2).

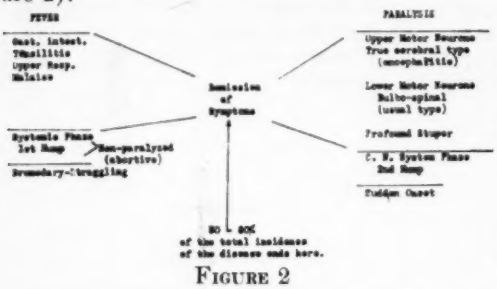

FIGURE 2

At times the relapse manifests itself in well marked paralysis. This remission may be afebrile. Leegaard reports a case in which the interval was three weeks. Neurath reports a similar case. Seeligmuller, West, and Wickmann report cases in which the initial symptoms were apparently absent entirely which developed paralysis. West proposed to name this form "Paralysis in the Morning." These cases are very rare and without doubt are due to the lack of a good history of the first stage and due to the lack of parental observation.

CROSS INFECTIONS

Paralyses of the poliomyelitis types have been observed after measles and scarlet fever. Wickmann, who has made a study of such cases, is of the opinion that the paralyses are not to be regarded as sequelae of measles or scarlet fever but a poliomyelitis infection following the recovery from the previous infection. Poliomyelitis is a primary, independent infectious disease and not secondary to any other infection.

THE FEVER

This comes on usually quite rapidly, reaches a temperature of 100 degrees to 102, rarely 104 degrees, and declines fairly rapidly. It lasts generally but a few days, three to seven, rarely longer. The height of fever bears no relation to severity of the succeeding events. Very severe initial attacks with high fever may be followed by very mild if any secondary symptoms. The converse is equally true. Occasionally the initial fever is ushered in by a chill which may repeat itself later at different times. These cases are infrequent.

SOMNOLENCE

Somnolence due no doubt to a general intoxication which frequently occurs and may be quite marked. Medin and also Wickmann have observed comatose states. In fatal cases only very few have passed away in a comatose state, on the contrary most die with full consciousness. Other cases again may be unconscious for a time, which later terminate favorably.

HEADACHE

Headache is present in practically all cases. At times it is not severe, depending in a measure on the systemic infection. Sometimes it is very severe similar to that complained of in cerebro-spinal meningitis. At times no special localization, but with striking frequency the occiput is designated as the chief location.

MENINGEAL IRRITATION SYMPTOMS

These occur in most cases. Meningeal irritation symptoms are manifested by a nape ache. Frequently it is accompanied by a stiffness of the nape muscles which is evidenced by an attempt to bend the head forward. Bending the head sideways is not hindered and causes no discomfort. At times a distinct contraction of the nape muscles can be made out.

Now and then *backache* is complained of and is in some cases very severe. In one of our adult cases it was the symptom most complained of. Tenderness of the spinal processes has been observed and also rigidity of the spine. There is often a slight Kernig sign present, and a Brudzinski.

Here must be mentioned also the symptoms of *hyperesthesia.* It occurs often and especially in young patients. Complaint is made on simply taking the little child out of the bed, or on being touched, and often times cries for fear it might be touched or handled. In adults this hyperesthesia is complained of chiefly when motions or manipulations are made which involve the movement of the vertebrae.

It must also be observed here concerning the *pains in the extremities.* These occur not infrequently. They are more or less widespread and continuous. They are described by the patient as radiating pains. They are short in duration and disappear generally with the subsidence of the fever. However, they may last for several weeks, acting at times as the cause of delayed attempt at standing or moving about because of the decided aggravation of pain occasioned thereby. In some epidemics pains in the extremities and back have been among the most prominent symptoms of the initial period and when present with hyperesthesia have led to error in diagnosing the case as rheumatism or even influenza. There are some cases in which hypoesthesia and lack of temperature sense were observed. Hypersensitiveness to pressure of nerves and of muscles has also been observed. Convulsions, indicating cerebral involvement, muscle twitchings, tremors and ataxia have all been occasionally seen.

GASTRO-INTESTINAL DISTURBANCES

These occur very frequently. Vomiting is the most frequent. It is not severe and does not last long. Diarrhoea is also quite common and associated with vomiting at the beginning of the disease gives the impression of a simple acute gastro-intestinal catarrh. In one of the cases recently seen by us diarrhoea was the only symptom complained of by the patient. At times there is *constipation*. The symptoms of the gastro-intestinal tract and its pathological alterations are of special importance from the fact that some able observers believe this to be the portal of entry of the infecting microorganism for some of the cases of poliomyelitis.

in a few days to reach its maximum both intensively and extensively. After some time the muscles of the paralyzed parts show changes in electrical reaction from a diminished to a partial or incomplete degeneration reaction. Atrophy in varying degree follows in time. Sensibility as a rule is not affected.

LABORATORY FINDINGS

Of all the symptoms in acute poliomyelitis there are none more valuable in establishing the diagnosis than those brought to light by spinal puncture and examination of the spinal fluid. There is nothing of value to be found in the examination of the urine and the blood. The spinal fluid is:

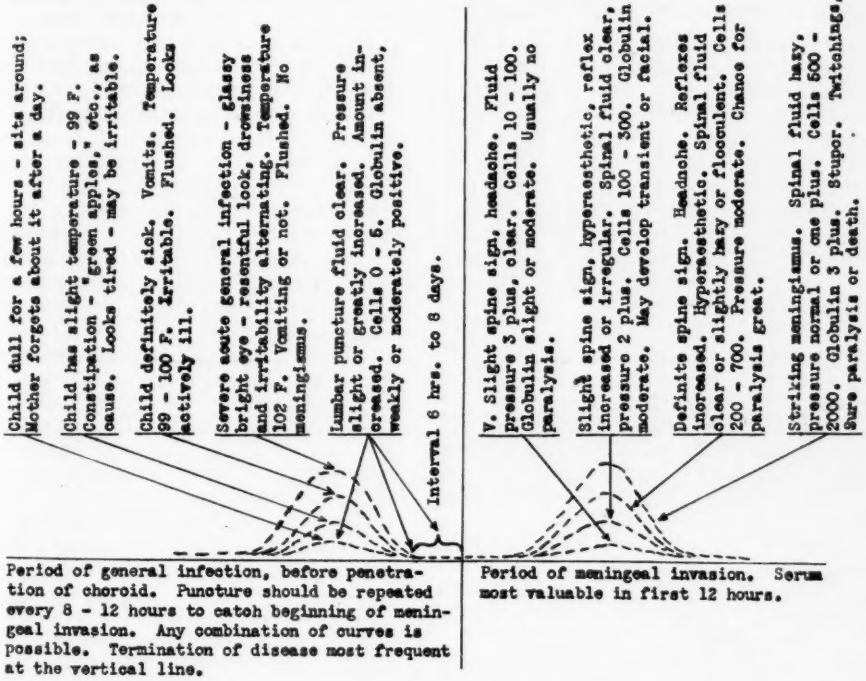
Child dull for a few hours - sits around; Mother forgets about it after a day.
Child has slight temperature - 99 F. Constipation - "green apples," etc., as cause. Looks tired - may be irritable.
Child definitely sick. Vomits. Temperature 99 - 100 F. Irritable. Flushed. Looks actively ill.
Severe acute general infection - glassy bright eye - resentful look, drowsiness and irritability alternating. Temperature 102 F. Vomiting or not. Flushed. No meningismus.
Lumbar puncture fluid clear. Pressure slight or greatly increased. Amount increased. Cells 0 - 5. Globulin absent, weakly or moderately positive.
Interval 6 hrs. to 8 days.
V. Slight spine sign, headache. Fluid pressure 3 plus, clear. Cells 10 - 100. Globulin slight or moderate. Usually no paralysis.
Slight spine sign, hyperesthetic, reflex increased or irregular. Spinal fluid clear, pressure 2 plus. Cells 100 - 300. Globulin moderate. May develop transient or facial.
Definite spine sign. Headache. Reflexes increased. Hyperesthetic. Spinal fluid clear or slightly hazy or flocculent. Cells 200 - 700. Pressure moderate. Chance for paralysis great.
Striking meningismus. Spinal fluid hazy, pressure normal or one plus. Cells 600 - 2000. Globulin 3 plus. Stupor. Twitchings. Sure paralysis or death.
Period of general infection, before penetration of choroid. Puncture should be repeated every 8 - 12 hours to catch beginning of meningeal invasion. Any combination of curves is possible. Termination of disease most frequent at the vertical line.
Period of meningeal invasion. Serum most valuable in first 12 hours.

FIGURE 3

SECONDARY FEVER—PARALYSES

With the recurrence of the secondary fever the chief phenomena occurs, namely, paralysis. This occurs usually with the onset of the secondary fever or in the course of several days. In adults it is easy to observe that these paralyses come gradually, but on the whole they develop quite rapidly. At first there may be only a weakness of the part, which in some cases increases to complete paralysis. Pari passu the tendon reflexes lessen in strength and finally as a rule disappear entirely.

It is quite characteristic for the paralysis

1. Under increased pressure.
2. Increased in quantity.
3. Has increased cell count.
4. Has increase in albumin and globulin.
5. Shows reduction of alkaline copper solution.
6. Shows fibrin web formation and
7. Has a characteristic colloidal gold curve.

RESUME

Figure 3 gives a resume of the symptomatology of the disease. As is readily seen the disease divides itself into a systemic phase and a central nervous system phase, separated

generally by an intermission or remission phase. During the systemic phase, which may be the only manifestation of the disease, the symptoms are those of an acute infection dependent somewhat upon the local inflammation. During this phase no positive diagnosis of acute poliomyelitis is possible when there is no prevalent epidemic. In the presence of an epidemic these symptoms are strongly suggestive. Only on the advent of the central nervous symptom phase, can a positive diagnosis be established, and this entirely through the neurological and laboratory findings.

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The Treatment of Poliomyelitis

Karl A. Menninger, M.D., Topeka

Infantile paralysis is a systemic infection. It must be borne in mind that it is first a constitutional disease, which may be so severe as to prove fatal, and that secondly it is a destructive process which attacks the spinal cord and particularly the part of the spinal cord from which emanate the motor nerves. Treatment, therefore, must consider not only the generalized infection and its immediate toxic effects, but must anticipate and combat the central nervous system injury and its evil progeny.

There are three stages in the disease from the standpoint of treatment:

1. Acute stage, including the period of onset, the fever, headache, etc.

2. Convalescent stage, beginning with the appearance of the paralysis and covering the brief stationary period, the rapid improvement period, and the slower improvement period which supervene.

3. Residual stage, the paralysis and the resulting deformities remaining.

Each of these stages has an entirely different treatment consideration.

Treatment of the Acute Stage

All authorities agree that whatever treatment is given to combat the infection should be administered before the paralysis appears. The fly in the ointment is that the diagnosis prior to the appearance of the paralysis is always difficult, often impossible, and rarely made. It happens that the best means of early diagnosis, granted a suspicious case, is also one of the best therapeutic measures. My brother's article in this Journal on the diagnosis of poliomyelitis from the spinal fluid should be supplemented by the statement that

1. *Lumbar puncture and spinal fluid drainage* is the first and probably best treatment procedure.

There are several theoretical explanations of the fact that nearly all observers agree that in many cases immediate improvement follows drainage of spinal fluid. For one thing it decreases the pressure. The cerebrospinal fluid is increased in amount because of the inflammation of the cord and meninges and the absorption is not rapid enough to prevent an over accumulation. Meningeal symptoms and symptoms of cortical irritation often result from this mechanism alone and are relieved when the pressure is reduced by drainage. This is not all, however, the fluid, it must be remembered, contains the katabolism products from the brain and cord and when the latter are inflamed it contains also the waste products of the inflammation. It also contains in all probability the infectious organism and the destructive toxins. Consequently when it is removed large quantities of these irritants are removed with it and the fresh supply of cerebrospinal fluid which replaces it is much less saturated with them.

If one spinal fluid drainage is good, several spinal fluid drainages are often better. (The same may be said of acute encephalitis which is very closely related to poliomyelitis.) My own technique is to withdraw about 15 cc. at first puncture and a larger amount at subsequent punctures. The usual recommendation is to drain the fluid until it drops slowly drop by drop from the needle. Some writers[19] advise the removal of as much as 50 cc., but this has not been our custom. As a matter of fact it probably does not make much difference just how much fluid is removed because after the puncture is made through the dura, the fluid probably keeps draining into the extradural spaces for awhile through the little hole remaining.

The following case illustrates very prettily the combined diagnostic and therapeutic value of lumbar puncture and spinal fluid drainage.

Mrs. A. X. S., married woman of 33, had a severe chill, fever, headache and malaise on August 11th which improved enough two days later for her to be up and about. The next day the malaise and headache returned accompanied now by nausea and a stiff neck and backache. The latter became very severe. A spinal puncture was done on the 15th and the fluid was under much pressure, so great in fact that it could not be measured with the water manometer. There were 840 cells per cubic millimeter, with a marked increase of globulin and albumin, a faint reduction of Fehling's solution, and a negative Wassermann. The Gold test was unsatisfactory.

The patient experienced almost immediate relief from the backache and headache. The stiff neck disappeared. No paralysis developed although both legs were weak for a

time. She showed no more symptoms whatever, seemed perfectly well and was discharged cured after another week's observation.

2. *Drug Treatment.* In the various epidemics which have been carefully studied all sorts of drugs have been used. In general these may be divided into those given for symptomatic relief for suffering and restlessness, etc., and those given to combat the infection. In my judgment the best of the sedatives is morphine; I am unable to see the validity of the objections usually urged against it. It may be given by mouth or hypodermically, it controls the pain, it induces sleep, and it should not be regarded as habit forming in the small doses and short interval over which it is necessary. If the patients do not take it well, as some do not, codeine may be given. Luminal sodium in doses of 2 or 3 grains hypodermically may prove to be even better than morphine, but I have not tried it out on enough cases to say and as far as any mention of it in the literature of it is concerned no one else has used it at all.

To combat the infection, there has been a more or less general agreement that since urotropin (hexamethylentetramine)[20] is excreted into the spinal canal and since it is bactericidal, is indicated. There has been some dispute as to whether it really works because theoretically something can be said on both sides, but practically there is no question in my mind but what it does good. This was very well illustrated by a case of encephalitis seen a few months ago at Lawrence, Kansas, with Dr. H. L. Chambers, and in several other cases less conspicuously. In this particular instance a man very acutely ill with encephalitis showed improvement very definitely after the instigation of intravenous urotropin treatment (in addition to spinal fluid drainage). It should be given in doses of 2 grams, one to four times a day, intravenously.

Recently in the German literature Buss[21] has reported "perfect results" with intravenous injections of acriflavine in 9 cases of encephalitis, including a case of postencephalitic parkinsonism. He injected daily 5 to 10 cc. of a 0.5 per cent solution for six or eight days. His patients were all women. This same treatment ought theoretically to be very valuable in poliomyelitis and should certainly be tried.

3. *Serum Treatment.* Various forms of serum have been experimented with in all the epidemics. Two types have been used rather extensively, convalescent human serum and immune horse serum. Providing the diagnosis can be made in time both of these seem to have given beneficial results and should certainly be used if available. Each deserves some discussion.

a. *Human Serum.* In the acute stages of poliomyelitis, the application of immune serum from human beings who have recovered from this disease has been suggested and tried by Netter[1] in a small series of cases. He drew his suggestion from the work of Levaditi and Netter[2], and Flexner and Lewis[3], who showed that immune substances were present in convalescing human subjects. Several years previously, Flexner and Lewis[4] had demonstrated that the immune human serum could prevent the development of the disease in monkeys if administered in the very early stages intracerebrally. The method and preparation of the serum is described in the New York City Monograph[5] of the 1916 epidemic, by Amoss[6], and others.

Obtaining the Serum. A Wassermann test is made on the individual's blood before the collection of the serum. The blood is withdrawn from individuals having had the disease not earlier than six weeks following an attack and may be used as late as 30 years following an attack. The New York series shows as effective results with serum taken from 10 to 20 years following an attack as early convalescent serum. Netter[1], however, states that the best results were obtained with serum from persons who had passed through an attack of the disease more recently—from six weeks to two years previously. Amoss states that if the serum is withdrawn from a patient who has passed the febrile stage and is in good physical condition, there appears to be no danger of transfer of the virus. The amount of blood taken varies from 500 to 700 cc. in an adult to 200 to 250 cc. in a child, depending on the body weight, age, and general health.

Preparation of the Serum. The blood is allowed to clot and remain in the ice-box for 24 hours to allow the separation of the serum. It is inactivated at 55 degrees C. for one hour, tested for sterility, and transferred to small sterile bottles. It may be preserved with 0.2 per cent tricresol. Such serum should be free from hemoglobin, red cells, or any solid matter. It should be kept on ice until used.

Administration. Advantage has been taken of both intraspinal and intravenous administration. The New York Monograph series were treated intraspinally. Draper's tables compiled on cases treated intraspinally as well as the results obtained by Netter and his associates, Zingher[8] and Peabody[9], do not appear as convincing as the results of Amoss and Chesney[10] where the combined intra-

spinal and intravenous or subcutaneous injections were used. Both Draper and Amoss recommend the introduction of the serum both intravenously and intraspinally.

The administration of serum after the febrile period has passed is of doubtful value. Netter believes that cases treated after the paralysis has appeared clear up with a speed and completeness that does not occur without the use of the serum. However, the majority of workers believe treatment at this stage of doubtful value. In cases during the febrile period, where a positive diagnosis has been made, the serum is universally recommended, and believed to be the most efficient.

Intraspinally, the serum should be given when the fluid is first drawn, if the diagnosis can be made positively, without a second lumbar puncture. According to Amoss the amount g iven depends on the amount of fluid withdrawn and the pressure. He states the amount of fluid withdrawn in cubic centimeters less 10 is the amount of serum to be injected by the gravity method. However if the pressure is very high, correspondingly less should be given. The serum should be warmed to 38 C. before injection.

Intravenous injection should follow the intraspinal injection, the quantity determined by the age, a child of 2 years receiving 40 cc., one of 9 years 80 to 100 cc. Both injections may be repeated in 24 hours if the temperature has not approached normal.

In a small series of cases reported by Amoss and Chesney, the administration of large doses of convalescent serum a few hours before the onset of the paralysis yielded distinctly encouraging results. Weed and his co-workers[22] have shown that the intravenous injection of hypertonic solutions in normal animals causes a reduction in the volume of the brain and spinal cord with a marked lowering of the cerebrospinal fluid pressure and an aspiration of fluid from the subarachnoid space into the perivascular "lymph" spaces of the brain and cord. With this in view, Aycock and Amoss[23] have carried on a series of experiments using hypertonic salt solution administered with convalescent human serum. They believe that the main possibility of a beneficial effect of such a method lies in the fact that the intravenous injection of hypertonic solution brings about an aspiration of serum from the subarachnoid space into the perivascular system, thus insuring a more intimate contact between the main lesions of poliomyelitis and the serum. They have reported one case where this has been tried[24].

b. *Immune Horse Serum.* Rosenow[11] reports in detail the results of serum treatment of 58 cases[12] of poliomyelitis in Davenport and Dubuque, Iowa, in 1917, with serum obtained from a horse which was injected at intervals with increasing doses of pure culture of the pleomorphic streptococcus isolated a short time previously from the central nervous system of monkeys paralyzed with virus. He is supported by Nazum and Willy[13], though apparently obtained a more immediate beneficial result. Amoss and Eberson[14] at the Rockefeller Institute obtained negative results with Rosenow's immune horse serum, though Rosenow[15] attributes the negative results to the fact that intraspinal injections were used instead of the intravenous method which he advocates, and that the serum was not activated with guinea pig complement. The same workers[16] have also found the antistreptococcus serum of Nuzum and Willy without neutralizing or therapeutic power against the virus of poliomyelitis. Flexner[17] states that large animals such as the horse, cannot be immunized with the virus to obtain antiserum. Nor can the serum from monkey be used for man.

Rosenow[18] reports further on his results with the immune horse serum, and notes that in sixty cases treated before paralysis had set in, there was no death and all the patients recovered without residual paralysis, only one having any paralysis at all. The average amount of serum given here was 18 cc. Of sixty-one cases with slight paralysis at the time of serum treatment, there were no deaths, and only one had permanent paralysis. The mortality in his whole series was 7.3 per cent, that in a series of seventy-two untreated cases in Davenport and Dubuque, was 25 per cent. Rosenow finds that his results are better than those obtained with convalescent serum.

Administration. Rosenow gives his serum intravenously. In his pre-paralytic group. the average amount of serum given was 18 c.c.; in the series with slight paralysis at the time of serum treatment, the average amount of serum given was 22 c.c.; in the series if advanced paralysis was present, the average amount given was 32 c.c.

c. *Epidemic Encephalitis Serum.* This is a recent suggestion. Crookshank[25] has pointed out and is inclined to believe that there is a close etiological relationship between epidemic encephalitis and epidemic poliomyelitis. It is logical to assume that any disease the serum of which will neutralize the virus of poliomyelitis to be very closely related etilogically with poliomyelitis, Neustadler, Larkin and Banzhaf[26] have recorded data which supports this view. Five monkeys were completely protected from poliomyelitis by sera of patients convalescent from four un-

doubted cases and one suspected case of encephalitis lethargica. To date this has not been tried in the treatment of human cases of poliomyelitis.

d. *Miscellaneous Treatments.* Many other methods of treatment have been suggested and tried. The Monograph of the New York epidemic reports a variety attempted there in 1916. Adrenalin was administered to 36 patients, without beneficial results. Quinine was tried in a small number of cases but it was concluded that it does not arrest severe progressive cases, does not hasten the recovery from paralysis, does not absolutely prevent the onset of paralysis when administered in the early stages, but *may be of some benefit in the pre-paralytic stage.* It was the opinion of the staff of the Queensboro Hospital that in cases showing serious symptoms, better results were obtained from the use of simple puncture (single or multiple) than when puncture was followed by the administration of any serum or medicament. Normal horse serum, diphtheria antitoxin, anti-influenza serum, anti-meningitis serum, normal blood citrated, and auto-inoculation were all tried but with no convincing results of special therapeutic value in any of them.

Counter irritation of the spine, catharsis, enemas and hot packs are simple measures of symptomatic treatment for which there is certainly no contraindication and much to favor. Deep warm baths are recommended by Jelliffe and White every three or four hours for 10 to 20 minutes at a temperature of 102 degrees. These relieve the restlessness and make the patient feel better which is often a very important matter which is forgotten in the attention we concentrate on paralysis.

TREATMENT OF THE CONVALESCENT STAGE

This may be divided into treatment by

1. Protection.
2. Muscle training.
3. Thermotherapy.
4. Massage.
5. Electricity.

1. *Protective treatment.* In the early part of the convalescence, while there is still much tenderness, the important thing to do is to do nothing! The patient should be kept in bed and kept warm. There should be no active manipulations; the paralyzed limbs should be kept completely at rest. A cradle should be placed over the legs, if paralyzed, so that the bed clothes do not rest upon them. Simple mechanical means should be used for preventing the early development of contractures and deformities. Thus in arm paralyses a pad should be placed in the axilla to support the deltoid, and in leg paralyses a posterior right angle splint should be placed along the leg to hold up the foot, or a box should be placed so that the patient can brace the toes and sole against it.

2. *Muscle training.* As soon as the tenderness has completely disappeared, active efforts should be begun to rehabilitate lost motor function. Muscle training is the most effective means. It should be remembered that some muscles are weakened but not completely paralyzed but others are weakened not by the disease but by disuse. Furthermore there is always some loss in powers of coordination and direction. These losses are all amenable to education. I have discussed this at considerable length in an article published in this Journal in August, 1920, on *What Can Be Done for the Paralyzed.* In this same article we outlined some 72 exercises for active and passive muscle training adapted from the work of Frenkel, whose efforts were aimed chiefly at the relief of sensory rather than motor paralyses, particularly in tabes dorsalis. We have found them useful, however, in other forms of paralysis including poliomyelitis.

A much more specialized group of exercises for the treatment of poliomyelitis have been devised and published in booklet form by Wilhelmine G. Wright of Boston who had extensive experience as an assistant to Dr. Robert Lovett in the Boston epidemic. Dr. Lovett's book on the *After Care of Poliomyelitis* should also be studied.

Our own work is in charge of Miss Ingeborg Lindquist whose training was received in Stockholm, Sweden, but who in the treatment of poliomyelitis combines the muscle training exercises of Miss Wright with those of Frenkel. Where the patients can afford it they are given daily treatment of this sort by Miss Lindquist and in addition receive the other forms of physiotherapy to be discussed below, particularly massage and thermotherapy. Where they are not able to afford this, the best treatment, we advise that the mother or nurse receive some instruction from Miss Lindquist or some other expert in the rudiments of muscle training exercises, then take the patient home and apply them to the best of their ability every day. This should be done under the doctor's supervision. I usually try to see the patient at intervals of a month or two. Lovett himself says "The aid of an expert is undoubtedly advisable but the constant daily faithful work of home attendance is more beneficial than occasional treatments at infrequent intervals."

I regard this as very much preferable to treatment by osteopathic physicians. I think I have no prejudice against these gentlemen in this regard but until they have a more ac-

curate conception of what this disease is, what can be done about it, and until they acquire better technique of massage and greater neglect of the great neck-jerking buncombe, I cannot feel that the patient is benefitted by the treatment ordinarily received from them.

2. *Hydrotherapy*, and 3, *Thermotherapy* may be combined. Miss Lindquist's technique is to bake the affected limb in a hot pack made by the application of woolen cloths wrung out of boiling hot water, the skin having first been covered with vaseline or talc. The stupes are covered with several layers of wool and usually with one layer of silk oilcloth or rubber. They may be left in position for about twenty minutes but should be renewed at the end of that time so that the treatment lasts about an hour.

If the patient can be placed in a warm tub at a temperature of 96 degrees F., the muscle exercises will be facilitated and there is probably some gain from the sedative effect of the warm water. Miss Lindquist uses this under our direction in some cases but most of those which we have to treat are so severely paralyzed that the effort of moving them to the tub is too great to justify it. Another difficulty about the practical application of this form of treatment in the home is that a special type of bath tub and a temperature regulating device is almost a necessity. We have this equipment at Christ's Hospital and have found it exceedingly valuable in many types of cases. I have previously advocated that every hospital should have at least one such tub and thermostat.

4. *Massage.* Massage is useful because it maintains the nutrition of muscles whose circulatory supply has been seriously crippled and whose inactivity has added the atrophy of disuse to the atrophy of paralysis. It is very important, however, that massage be given by an expert. There are so few experts in massage in Kansas that unless the patients are under the immediate care of one of them I do not ordinarily recommend it. Rubbing is not massage. Rubbing itself does no harm and probably does some good. My point here is that the mother way be advised to stroke the child's limb but this should not be dignified by the title of massage and such performances which are labeled massage by persons of inadequate training give a false sense of security and for that reason are likely to be used at the wrong time or in the wrong place or in the wrong way and thus do damage. For example I recently saw a man who had spent the proceeds from the sale of his 80-acre farm having his paralyzed arm manipulated and massaged for a year by an osteopath who I believe conscientiously felt that this would help the paralysis in time in such way as I have suggested that these treatments do help. Examination, however, revealed without question that the paralysis was hysterical. Hysterical paralyses can be cured rather easily if they have not been hardened into an incurable state by misguided physical treatment. Such has probably been the case with this boy.

5. *Electricity.* Stimulation of the muscles by electricity helps a little bit. Almost any form of electricity may be used. I consider it much less important than the other forms of treatment. It is probably a mistake to try to do everything to one patient and I usually prefer the other methods to electricity. It is sometimes the most available means, however, and usually does no harm. One danger about electricity in the ease with which it is exploited by quacks. I was recently (August, 1923) called in consultation to see a case of infantile paralysis. As I was leaving, the father, in some embarrassment, told me of an incident which had occurred earlier in the evening. A person with an electric cabinet who they later learned had victimized one of the neighbors and had learned from them of the existence of this case came to the door and said, "I am the doctor from Topeka." Of course he was admitted; he marched to the patient's room, buzzed his electric coil, stimulated a few muscles, collected $14.50 for his services from a rather gullible but naturally distracted father and left for parts unknown.

TREATMENT OF THE RESIDUAL STAGE

This stage is reached when no further improvement in the function of the paralyzed part is discernible. It is usually some months to a year after the acute illness. Functional training is replaced then by structural support or alteration. This is the realm not of the neurologist except in an advisory capacity, but of the orthopedist. It is imperative in the interest of the patient and in justice to the possibilities of scientific medicine that every case of poliomyelitis with a residual paralysis or contracture should have the benefit of orthopedic consultation. The orthopedists have put themselves on the map with their marvelous restitution of function in some of these cases, as I know by personal contact with such men as Robert Lovett of Boston, and Karl Werndorff of Wellington. Cases that appear to the uninitiated to be hopelessly deformed are reconstructed past the bravest hopes.

In general the orthopedists reply upon two general modes of treatment, mechanical and operative.

1. *Mechanical treatment* is most familiar

in the form of braces, which have been fairly widely popularized. They are often inadequately and unskillfully applied, however, to the discredit of most creditable devices. In addition to these, however, there are great numbers and variety of the most ingenious devices for deformity correction. A proficient orthopedist must decide which of these to use, as well as knowing the technique of their application.

2. *Operative treatment.* Surgical operative procedures of various sorts are now used with success by the orthopedists in selected cases. There are muscle transplanting operations, tendon transplantations, tendon cuttings, ligamenting with silk, and various bone and joint excisions and fractures. Nerve grafting has not been very successful so far; some day it will be. All of these procedures are technically difficult and should be done by an expert in that work. They should never be done during the stage of improvement.

3. *Psychotherapy.* The psychiatrist can help here. One matter of great importance in this stage is the patient's mental life. Adults are very likely to become depressed, although never so much so as they would if they realized the real seriousness of the paralysis. Sometimes they are over confident and it is often a task of great difficulty for the physician to decide just how much to disillusion them. Personally I feel that we should be quite frank with them if they are more than mere children and tell them that a complete restoration of function is not likely or at least not certain but that some degree of improvement is certain to follow providing a persistence in treatment regulations.

Children are more likely to show their mental symptoms after the paralysis has been well established and they have begun again to take a place in social life. They develop a sense of inferiority about their handicap which may become far more serious than the paralysis itself. The younger the child the more likely this is to occur as a character deformity. It can probably be counteracted to some extent by the insistence upon a healthy, frank attitude toward the affliction on the part of the family and the physician. All doctors have a tendency to magnify the physical in this philosophy of life, forgetting that the mental and spiritual life of the individual is incomparably more important and is not necessarily very much interfered with by a monoplegia or physical handicap.

SUMMARY

Poliomyelitis is amenable to attack by various methods in the acute stage; the earlier the diagnosis the better the prognosis with treatment. After the paralysis has occurred there is a definite program of treatment which definitely accelerates the improvement and carries it to a point well beyond that ordinarily reached by the natural processes of nature alone. These treatment methods are presented in outline in order. Space prevents the presentation of case histories. Any neurologist and any orthopedist could cite ample material to prove that our attitude toward the prognosis of poliomyelitis should be more optimistic.

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Report on the Medical School of the University of Kansas

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To the Board of Administration,
Topeka, Kansas.

At your request I have made a study of the Medical School of the University of Kansas. I spent May 22nd, 23rd, and 27th at Kansas City and May 24th at Lawrence. I visited the laboratories at both places, the existing hospital, and the new site of the medical school in Kansas City, Kansas. I interviewed all available members of the faculty at Lawrence and many at Kansas City. I also saw numerous physicians and alumni of the school in both Kansas City, Kansas, and Kansas City, Missouri, as well as some business men. At St. Louis I consulted Dr. N. P. Colwell, secretary of the Council on Medical Education of the American Medical Association, and Dr. C. H. Greene, of the University of Missouri.

LOCATION OF CLINICAL DEPARTMENTS

It is understood by your inspector that after a full discussion it was decided two years ago that the practical instruction in medicine should be carried on in Kansas City, Kansas. A new and much better site was purchased. Work on the first hospital building is in progress. Your inspector assumes that the question of the location of the medical school is closed.

The new site is satisfactory—a great improvement over the old. If, however, more land is available in the neighborhood, on both sides of the state line, it would be well if it could be obtained, either by the university or its friends, to be used by medical and allied institutions that might be willing to locate in the neighborhood. A medical school has much to offer such institutions; for example, a private hospital benefits by nearness to adequate pathological service. On the other hand, the medical school is benefited by any such institutions in its neighborhood.

LOCATION OF THE LABORATORY DEPARTMENT

The departments of anatomy, physiology, bacteriology, and biochemistry are at Lawrence. The department of pathology is at Rosedale, and the department of physiology which is charged with teaching pharmacology conducts instruction in the latter subject at Rosedale, though most of its work is at Lawrence. The fundamental departments are therefore divided from each other and from the clinical departments. This is a serious handicap.

At Lawrence the department of physiology alone appears to be decently housed, and even this department, although it has a fair amount of space, can not be said, in the basement rooms assigned to it, to be permanently provided for. The departments of anatomy, bacteriology and biochemistry are much crowded, and the condition is growing intolerable as the classes increase in size. All these departments are in different buildings.

Recommendation 1: A building for the medical sciences should be provided at once.

When one takes up the question of the location of such building two points of view and two lines of argument are presented: (a) in favor of retaining the present laboratory departments at Lawrence and even taking pathology in part to that place; (b) in favor of placing all the laboratory or preclinical departments at Kansas City, Kansas, with the practical branches.

Your inspector is familiar with the arguments for and against the divided school. He has watched the development of the medical departments of various institutions such as Rush Medical (University of Chicago), Indiana University, University of Nebraska, University of Colorado, University of Wisconsin, University of Texas. He has attempted to review and evaluate the arguments on both sides in the light of the historical development and in the light of the present situation and the present sentiment in Kansas.

Recommendation 2: The policy of a unified medical school should be adopted now. As soon as possible the laboratory building should be erected at Kansas City. The departments of anatomy, bacteriology, biochemistry, and physiology should be moved to the latter city.

Even before a new building can be provided the question of the possible accommodation of these departments at the Rosedale campus by readjustments and the joint temporary use of laboratories might well be discussed.

REASONS FOR RECOMMENDATION 2.

Your inspector considers this recommendation so important that he will attempt to recapitulate the reasons for it:

1. *Effect on the students.* The students need opportunities to study anatomy, physiology, bacteriology and biochemistry throughout the four years of the medical course. They need constantly to be reminded that practical medicine is only the application of these sciences. They will have opportunities to study sick people all their lives, but the lab-

oratory sciences as a rule only during the medical course. It is a pedagogical mistake to cut off the students from the fundamental sciences after a contact of only one year and a half with them.

A valuable part of medical education is the contact of advanced and beginning students with each other. This is lost in the divided school.

The beginners get enthusiasm and interest from the proximity of the clinic. This is lost in the divided school.

There is a movement to begin clinical teaching earlier in the course. If this experiment should prove successful, the students in a divided school will be at a disadvantage.

2. *Effect on the faculty.* (a) The laboratory men need contact with the clinical men and with the hospital in order to keep laboratory teaching and research in practical lines. The fundamental subjects should be taught primarily as science, but nevertheless, by contact with clinical teachers, the laboratory men can learn what to emphasize in order that their students may be properly prepared for the practical work of the junior and senior years. They can also learn of practical questions for research.

(b) The clinical teachers need the laboratory teachers. It is a tradition that pathology should work hand in hand with clinical medicine. This is because pathology developed in the hospital and dead house. No one would think of divorcing pathology from practice; and if the last half of the sophomore year should be taken from Rosedale to Lawrence, it would be necessary to teach pathology in both places.

But the clinical teachers need the other preclinical branches as much as they need pathology. Medicine becomes more and more biochemistry and physiology, and less and less pathological anatomy. The bacteriologist, the biochemist, and the physiologist should all have their contacts with the hospital. Even the anatomist needs hospital relations in order to get fresh material. If there was no other argument for the united school than the need which the clinical branches have for the preclinical, it would be more than ample. A purely clinical school is a purely practical school. Without the preclinical departments the medical school cannot have the academic atmosphere, the university spirit, the research habit, and the altruistic idealism which attach to departments where full-time men make teaching and research their life work. Only the wholetime laboratory men can bind the part-time clinical faculty into a co-ordinating working body.

A divided faculty really means two faculties, neither of which can function properly. You can not divide a race horse into fore and hind halves and expect to win the derby.

3. *Educational policy.* Medicine consists of those parts of biology, physics, and chemistry (and practical psychology) which may be used in understanding human disease and in diagnosing, treating and preventing human disease. These parts of biology, physics, and chemistry are known by special names such as anatomy, physiology, biochemistry, when one is thinking of pure sciences. They are known as surgery, medicine, pediatrics, etc., when one is considering applied science. It is an educational mistake to separate the pure sciences from the applied sciences.

Suppose one should propose that botany, bacteriology, chemistry, and physics be taken away from Manhattan and that only the practical applications of these should constitute the agricultural college, you would have the educational anomaly that now exists as regards medical education in Kansas University.

All members of the faculty and doctors interviewed at Kansas City, except two, believe that the school should be united at Kansas City. There is a strong but not unanimous sentiment among the preclinical teachers at Lawrence in favor of such action. Medical educators in general do not favor the divided school. Several schools which began that way have later been united.

POLICY AS TO CLINICAL DEVELOPMENT

Your inspector believes that the duplication of equipment necessary for teaching physiology and bacteriology to university students at Lawrence (when the main departments are moved to Kansas City) will be insignificant, this work being elementary in character.

The medical school has been located within two blocks of the Missouri-Kansas line. Only one reason can justify this location, namely, the determination to develop a metropolitan medical school, using the facilities and clinical material of "Greater Kansas City."

Recommendation 3: The policy of a metropolitan medical school making use of the hospitals and clinics of both Kansas City, Kansas, and Kansas City, Missouri, should be formally adopted. Cordial relations on both sides of the State line should be fostered. The idea that medical education is an interstate and national service should be promulgated. Private donations to the school as a "Greater Kansas City" institution should be solicited. Gentlemen's agreements, if formal contracts are not possible, should be entered into with the hospital managers on the Missouri side.

Your inspector took great pains to ascertain

whether such arrangements would be possible. It was the unanimous opinion of medical and business men in Kansas City, Missouri, that amicable and workable relations can be brought about and that public and alumni sentiment in that city will support the university in getting the necessary agreements with the hospitals.

The best teachers should be chosen, regardless of residence. The organized medical profession of Kansas should back up this policy of metropolitan development.

POLICY AS TO SUPPORT OF UNIVERSITY HOSPITAL

Every hospital exists primarily for the care of the sick and their restoration so far as possible to useful citizenship. This being true the support of the patients in the State university hospital should not be a charge on the educational funds of the State. The university may, however, properly pay for teachers and for teaching and research equipment in such a hospital.

Recommendation 4: The policy of developing the hospital on room and ward charges against patients who are able to pay and on State payment for patients who are indigent should be adopted. As soon as possible the university should discontinue the use of educational funds for the support of patients. The so-called county law is founded on the wrong psychology and should be abandoned. The county as a unit for the care of all types of indigent sick is as antiquated as is the county unit for that special class of sick known as insane. An effort should be made at once to secure a statute providing that sick and crippled children may be sent to the university hospital at State expense. Gradually, as in Iowa, the people will come to recognize the great value of such service and be willing to extend and support it.

Kansas should establish hospitals for crippled and deformed people, for eye and ear, for venereal diseases, and for mental diseases, not as separate institutions but as pavilions of the university hospital. A psychopathic pavilion, or hospital unit, co-operating with the courts, insane hospitals and all the official machinery for handling mental deficiency and delinquency should be an early development. Above all, the relation of all these social advances to medical education should be kept in view.

THE OUTPATIENT DEPARTMENT

The outpatient department should be fostered in every way. Nothing is worse than such an emphasis on hospital teaching that the student goes out trained chiefly in unusual diseases and major surgery, and dependent on the hospitals for carrying on his practice. The hospital should not overshadow the dispensary. The best professors and teachers should be kept at work in the latter department, and the students should be given ample time there.

RELATIONS WITH KANSAS CITY, KAN.

The medical school should be an institution which the chief city of Kansas should be proud of and which it should co-operate with and support in every way. It is fortunate that Rosedale is now a part of the large municipality. The establishment of good means of communication between the main part of Kansas City, Kansas, and Rosedale should be hastened.

Kansas City, Kansas, should develop its facilities for the care of the poor in connection with the medical school. Its Health Department should be the laboratory and field outlet for public health teaching.

Recommendation 5. The proposal that the old hospital at Rosedale be used for contagious diseases and tuberculosis (perhaps also for maternity cases) for Kansas City, Kansas, should be consummated. The hospital should be supported by the city, which needs facilities for the above classes of patients. The medical school should furnish the staff. Kansas City, Kansas, should not develop any hospitals apart from the medical school. It should strengthen in every way the State institution within its borders. Thereby it will accomplish its own purposes better and at less expense.

EDUCATIONAL STANDARDS

So far as I could learn, the premedical requirements are well enforced. Everybody acquainted with the facts states that the standards of scholarship in the medical school have steadily advanced during the past six years. The graduates are fairly well trained. Men who had served internships in the East, in contact with graduates of the best schools, state that they held their own in the competition. This does not mean that there is no room for improvement. It means that the medical school has made progress and should be commended and supported.

BUDGET

The budget is small. Whether it is proportional to the total revenue of the university I can not say, but it ought to be increased.

I have no suggestions except that the payment of any considerable salaries to part-time clinicians should be discouraged in the present state of the school. Men should be sought who are willing to do the work for the advantage of medical education and their own advancement through the school relation. This does not apply to young men who may be willing to give practically full time for a

few years. Such men may be paid, but they should step out as soon as their private practices begin to increase. The fundamental departments must be provided for before the clinical. Strong laboratory departments are indispensable.

ST. MARGARET'S HOSPITAL

From accredited accounts this institution has much good clinical material not adequately used by the medical school. The distance is a disadvantage, but a workable plan should be formulated. Perhaps something like the Minnesota student-internship might be developed for this hospital and some of the other institutions of the two Kansas Cities. The university might support residents (fellows) for the principal service in St. Margaret's Hospital.

RELATIONS WITH THE MEDICAL PROFESSION

I believe the Kansas State Medical Society is friendly to the school and will help it. Broadly looked at, a good medical school and a good State hospital will help the profession much more than they will hurt it. I am certain that this view holds among the leaders of the profession in Kansas.

Meanwhile the university should do its best to be of service to the profession by short courses, by extension work, by public education in medical matters, and by setting good standards. Both sides should labor for cordial understanding and co-operation by frequently meeting together.

GENERAL CONSIDERATION

It is a mistake to permit a medical school to develop as an institution primarily for the training of physicians. This ideal leads to the criticism that medical education is expensive; that it is for the benefit of a limited class, and that it should not be supported by the State.

The agricultural college is supported because it leads to the production of better crops and better domestic animals. The medical school should produce better human beings. Both schools apply the same sciences, namely, biology, chemistry, and physics, the one to animal, the other to human needs. The medical school has an even closer relation to the happiness and prosperity of the State than the agricultural school; for what will avail any amount of economic prosperity in the absence of health?

The medical school should not be content with the negative duty of caring for people when they are sick and of preparing physicians for the traditional career in curative medicine. It should have a positive program of public health and preventive medicine; that is, hygiene in its broadest sense. To this end the medical school should foster all forms of educational activity, both intramural and university extension which will produce doctors with ideals of public service and which will bring to the people a knowledge of the applications of science in combating disease and supporting human efficiency.

The medical school should administer all curricula based primarily on the medical sciences. These are the medical course, the dental course, the nursing course, medical social service, and the public health course.

Public health nursing is one of the first of the latter courses that should be considered. There should be a public health nurse in every county, and the medical school should train the women for these positions. They should be apostles of health and expounders of medical knowledge in the homes and schools of the people; just as the county agricultural agents are the teachers of better agriculture and animal husbandry in the fields and stables.

The medical school, though located at Kansas City might well offer popular courses at Lawrence and even at Manhattan for future teachers, for home economics students; indeed for any and all students. Funds should be available for extension work among both the doctors and the laity of the State. "The State-wide campus" is certainly the ideal of the modern State supported medical school, as it is of the agricultural college or the school of education.

The University of Kansas might canvass the question of dental education; and if there is need, dentistry might be developed as part of the greater medical school. It is a mistake alike of State policy and of educational policy to have dentistry independent of medicine. This does not mean that every dentist should have the complete training of a physician, but it does mean that both professions are founded on the same sciences and should be taught in the same laboratories and clinics. The development of a unified outpatient department including medicine, dentistry, and social service might well be considered.

The University of Kansas has a good opportunity in medical education. It need not try to rival Johns Hopkins and Harvard Universities all at once. It needs time. It needs boosting instead of knocking, harmony instead of jealousy, co-operation instead of petty criticism. I believe the time is ripe for a big forward movement.

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Some one has said, and we have not the statistics to disprove the assertion, that it is not so much the apeness of the ape that some people object to as the humanness, as the connecting link between him and homo sapiens.

BELL MEMORIAL HOSPITAL CLINICS

Clinic of H. R. Wahl, M.D.

A CLINICAL PATHOLOGICAL CONFERENCE; INTESTINAL OBSTRUCTION, ADHESIVE PERITONITIS, TUBERCULOSIS PYONEPHROSIS AND TUBERCULOSIS OF THE ADRENAL GLAND.

This patient is a colored woman age 56 who was brought to the hospital with marked constipation and vomiting. The latter began suddenly three months ago and at first was severe only at night. Since then these vomiting attacks have become much more severe and frequent occurring after each meal. There was bile in the vomitus. Soft food such as eggs, milk and milk toast only could be tolerated There has been a loss of twenty pounds in weight since the onset of this condition.

There has been nothing in the family or past history to throw light on the patient's condition. She has had, however, two attacks of "pneumonia" in the past seven years.

On physical examination we found a large somewhat fleshy colored woman with some tenderness over the right upper quadrant of the abdomen. There were violent attacks of vomiting. The teeth showed marked pyorrhoea. The chest and abdomen showed nothing abnormal. The urine examination was negative. The blood showed a slight anemia and there was considerable reduction in the blood chlorides (390 mg. to 100 cc.) and carbon dioxide combining power (42 volume per cent). The blood pressure was 78 diastolic and 130 systolic. Two weeks after entering the hospital an exploratory laparotomy was performed in order to ascertain the cause of the partial obstruction which was thought to be present. At the operation adhesions were found over the gall bladder but no gall stones could be palpated. Adhesions were numerous over the entire peritoneal cavity but no definite obstruction could be recognized. The intestines showed no distention in any place. The left kidney was hard and nodular. There were adhesions about the internal genitalia, the tubes being thickened. An operative diagnosis of chronic salpingitis with old peritoneal adhesions was made.

While in the hospital considerable saline infusions were given to the patient because of the marked depression of blood chlorides. This treatment was followed by some amelioration of the symptoms. Following the operation there was increase in pain. The pulse became more rapid. The temperature went up to 104 degrees. A persistent hiccough soon appeared and death occurred on the fourth day.

The clinical diagnosis was partial intestinal obstruction, the cause of which, however, was not determined at the exploratory laparotomy. Following the latter a diagnosis of chronic salpingitis with general old peritoneal adhesions was made. A peritoneal infection probably post operative was also suspected.

The autopsy findings were of considerable interest. A thin bloody fluid could be expressed from the laparotomy wound. This showed no evidence of healing. Chains of streptococci were present in smears of this exudate. The undersurface of the wound had broken down, and surrounding this area there was a considerable amount of thin bloody pus which was confined to the upper right quadrant by adhesions with the omentum and coils of the small intestines. The latter showed no irregular distinction and nothing to suggest an obstruction. There were, however, numerous old dense firm adhesions throughout the peritoneal cavity. There was some discoloration and congestion of the ileum adjacent to the broken down and infected laparotomy wound. Both pleural cavities were obliterated by dense adhesive bands.

These are the organs which were removed at autopsy. You will note that the heart and lungs are apparently normal. The pleural surfaces of the lungs show numerous adhesive tags and anthracosis. There are a few puckered scars near the apices of both lungs suggesting healed tubercles. About 5 cm. above the bifurcation of the trachea there is a large, oval, hard, partly calcified mass, measuring 3 by 2 cm. This mass was situated directly over the esophagus and apparently caused some pressure upon the same. On removal it was found to feel very hard. It cut with some resistance and its substance is replaced with caseous material in which there has been some calcification. It evidently represents an old tuberculous bronchial lymph gland. Similar tuberculous lymph glands are present about the bifurcation of the trachea and at the hilum of the lungs.

The liver is large, soft and flabby. Notice the yellowish appearance of the cut surface and the greasy feel of its substance. It shows marked fatty change. Note also the large soft spleen. It cuts readily. Its cut surface is dark reddish brown in color and very soft. Its pulp scrapes off very easily with a knife. It presents the typical picture of an acute splenic tumor. This organ, the pancreas, is soft and flabby but its consistency is probably due to post mortem autolysis which it undergoes earlier than most other organs.

The left kidney feels hard and nodular. The capsule is very adherent and can be torn away only with difficulty leaving a rough-

ened surface over the cortex. The organ is unusually small weighing only 45 grams. On section it cuts with much resistence and the calices and pelvis are dilated and filled with caseous material. The cortex and medulla are thinned out by the caseous substance in the center. The kidney substance shows marked atrophy. The other kidney is much enlarged showing a compensatory hypertrophy, otherwise it appears normal. The bladder and internal genitalia show nothing striking except the adhesions on the surface.

The adrenal glands show a striking change. The left adrenal is atrophied and scarcely recognizable in the fat about it and to which it is very firmly adherent. There seems to be an indurated inflammatory tissue surrounding it and blending with it. It weighs only 4 grams. No medullary substance is recognized and the cortex is unusually thinned out. The right adrenal is very much enlarged and weighs 20 grams. Over its surface you will note reddish brown nodules 1 to 3 mm. in diameter. The cortex is thickened and in its substance some of these reddish brown nodules may be seen.

One of the loops of the intestines shows an interesting picture. It is one of those that formed a part of the wall of the abscess beneath the laparotomy wound. Its outer surface is reddish blue in color. It appears congested. It measures about 23 cm in length. On opening, its contents are fluid but, most note worthy, is the fact that its mucosa is covered with a membranous exudate adherent to the underlying tissue. There is no ulceration, however, present and no lesions in other parts of the intestines. The retroperitoneal glands are large, edematous and markedly congested. None of them show the typical tubercles or caseous areas which are noted in the bronchial and tracheal glands. The aorta showed marked sclerotic changes, atheroma and calcification. The calcification is particularly marked in the abdominal portion.

The microscopic examination of the tissues was of particular interest in connection with the kidneys and the adrenals. The kidneys showed some old tubercles and an old tuberculous granulation tissue particularly in the neighborhood of the medulla and around the calices. In the adrenal glands both miliary and conglomerate tubercles were seen. Some of these appeared to be healed and fibrosed, others show much more active lesions in which multinucleated giant cells and caseation were present. The active tuberculous process was particularly marked in the hypertrophied adrenal. A more chronic change and partially healed condition was found in the small atrophied adrenal gland. There was very little medullary substance in the latter. The cortical layer showed considerable atrophy and degeneration. Acute degenerative changes were present in both the myocardium and in the liver, abundant fat being present in the latter.

In summing up the autopsy findings, we conclude that there is general adhesive pleurisy and peritonitis associated with old tuberculosis of the lungs, bronchial glands and kidneys and also adrenal glands with an active tuberculosis involving the right adrenal gland. Following this there was an infected laparotomy wound with a local peritonitis and a membranous enteritis. A streptococcus was isolated from the laparotomy wound. The membranous enteritis is nothing but an extension of the streptococcus infection beneath the laparotomy wound and represents a terminal complication of the same. The immediate cause of death is probably the streptococcus infection of the abdominal wall and the localized acute peritonitis underneath.

It is of interest to note that the clinical course suggested an intestinal obstruction and yet no obstructing mass was found at the autopsy. It is true that there were numerous peritoneal adhesions but no distention of the intestines from any constricting band was found. It is possible that the violent vomiting attack may have been cerebral in origin (examination of the head, however, was not permitted) but it is more probable that these peritoneal adhesions are directly responsible, for it is well known that strong afferent impulses such as may come from the peritoneum will set up a reflex type of vomiting. Furthermore, adhesions between the viscera and the mesentery and the parietal wall are very sensitive and would become irritated by peristaltic movements following the ingestion of food, hence, the vomiting after eating. Cases are occasionally reported in which symptoms of intestinal obstruction occur with nothing to account for it except a general old adhesive peritonitis.

It is quite probable that the numerous adhesions in the peritoneal and pleural cavity bear an intimate relation to the old tuberculous processes which are described in the autopsy. Healed tuberculous lesions were present in the lungs, in the bronchial and tracheal glands, and in the kidneys and also in one of the adrenal glands. It is quite probable that the history of two attacks of pneumonia was really that of tuberculous pleurisy. The adhesions in the peritoneal cavity may well have been tuberculous in origin. Marked tuberculous peritonitis may exist with relatively insignificant symptoms

and recovery may leave similar adhesions to those found in this case. The presence of an old tuberculous kidney is not surprising. The symptoms are often mild and, especially in the colored, may be easily overlooked.

The tuberculous changes in the adrenal gland is worthy of more than passing comment. One gland was almost entirely replaced by tuberculous granulation tissue, while the other showed some tubercles superimposed upon its surface and also in its substance. The second gland showed a definite compensatory hypertrophy indicating that the tuberculous process is only of recent origin. Tuberculosis of the adrenal gland usually results in the clinical picture of Addison's disease. In fact, large caseous tubercles in the adrenal gland is the common lesion in this condition. I have seen one case when tuberculosis was absent and in this case both adrenal glands were markedly atrophied and the seat of a chronic inflammation. In all others there were always either large caseous tubercles or tuberculous granulation tissue that had more or less completely destroyed the gland. In this particular case there was little to suggest Addison's disease clinically, there being no marked weakness and no pigmentation though the latter naturally would be obscure in this race. In view of the woman's age and marked sclerosis of the vessels, the blood pressure which was 78 to 130 can be regarded as rather low and is for this reason suggestive and possibly a result of partial destruction of adrenal tissue. However, one adrenal gland showed such extensive compensatory hypertrophy that it probably supplied sufficient chromaffine tissue to supply the needs of the body. It should also be noted in this connection that the only evidence of active tuberculosis found in autopsies were the tubercles which were present in the right adrenal gland which was the seat of scattered miliary and conglomerate tubercles.

It is quite evident that this case represents an example of a complication resulting from an old latent tuberculosis. There were a series of old partly healed tuberculous lesions such as adhesive peritonitis, adhesive pleurisy, healed tubercles of the lungs, pyonephrosis, and tuberculosis of the adrenal glands. One of these, that is the peritoneal adhesions set up certain functional disturbances in the form of reflex vomiting which brought the patient to the hospital for treatment and in endeavoring to ascertain the cause of the vomiting a partial obstruction was suspected, a laparotomy was performed, following which and probably as a result of the patient's lowered general resistance, infection developed in the wound resulting in local peritonitis and death of the patient. That the tuberculous process was not entirely healed is evidenced by the presence of rather fresh tubercles in the other hypertrophied adrenal gland. This active tuberculosis, however, did not play an immediate factor in bringing about the patient's fatal illness.

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Dr. Earl Miller has been appointed Director of the Department of Experimental Medicine of Parke, Davis & Company, Detroit, to fill the vacancy following the death of Dr. Ezra Read Larned, who was the originator and organizer of this department and occupied the position as head of the department until his death. Dr. Miller was assistant to Dr. Larned for twelve years and has a wide acquaintance among medical men interested in clinical research work.

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The Council on Pharmacy and Chemistry reports on the present status of sour milk therapy. During recent years reports have been published which indicate that the growth in the intestine of the normally present bacillus acidophilus may be increased so as to make this the predominating organism, by the administration of lactose, by milk fermented with bacillus acidophilus, or by the administration of viable cultures of bacillus acidophilus in conjunction with lactose. Growing out of the claims of favorable therapeutic action, the use of so-called bacillus acidophilus milk and other products prepared with B. acidophilus has become quite widespread. While no one subscribes today to the original theories of Metchnikoff, there are many who believe that the regulation of the bacterial flora is of importance. There is evidence that the administration of sour milk is at times beneficial, particularly in pediatrics. A wide clinical observation indicates that for certain types of gastric and intestinal disturbances, fermented milk accomplishes more than unfermented milk. (Jr. A. M. A., Sept. 8, '23.)

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The secular press tells us that the speech center of a righthanded man is in the left side of his brain; and the speech center of a lefthanded man on the right side of his brain; and an ambidextrous man has one in each side of his brain. If a man wants to be a great talker all he has to do is learn to be ambidextrous. The principle is illustrated in the man who got a set of teeth by mail order from Sears and Roebuck and talked himself to death. The undertaker examined the dead man's artificial teeth and stamped on the plate was "For Women Only."

THE JOURNAL
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W. E. McVEY, M.D. - - Editor

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Report on the Medical School

The report on the medical school by Dr. E. P. Lyon, Medical Department of the University of Minnesota, appears in this number of the Journal. It may be well to explain that during his last term of office, Governor Allen and the Board of Administration requested Dr. George F. Zook of the National Bureau of Education at Washington to conduct a survey of the institutions of higher learning in the State. On a committee for this purpose he secured Mr. Coffman of the University of Minnesota and Dr. Mann of Cornell University. In response to a special request of the Dean that the medical school be gone over very carefully Dr. Zook selected Dr. Lyon for this special purpose. Dr. Lyon spent considerable time at both branches of the school and conferred with various members of the faculty.

Dr. Lyon has made a very comprehensive report and the recommendations he has made seem to meet the general approval of those who have given much though to the future of the school. In order to carry out the most important of these recommendations and the obviously reconstructive changes they suggest, it will require the whole hearted support of the profession in the state. The people at large, and especially the legislature must be taught to regard the medical school as more than a school for the graduation of students in medicine.

Its importance as an economic factor should be pointed out. The people can be and should be shown that they are the ultimate beneficiaries of whatever investment the state may make in its medical school.

Our Problem

One of the most important problems confronting the medical profession is how to educate the people so that they will have more correct ideas of diseases and their prevention and cure; so that they will be less ready to accept the phantasies constantly constructed for them by those who wish to exploit the ills and afflictions of mankind; so that they will better understand the difference between an educated doctor, trained in all the branches of medicine, and one whose mental horizon is limited by a dogma or creed—who has but one idea and that a questionable one.

A short time ago some data were collected in Chicago to assist a committee from the Illinois Medical Society in planning a campaign for education. The purpose was to determine the attitude of the people toward the medical profession, and to learn the reason for such antagonism as might exist. Replies to the questions asked were grouped from 6,772 people in and out of Chicago. Of this number only 931 had never dabbled with any of the cults or pseudo-sciences but only 384 were entirely content and satisfied to let the cults alone. The report was submitted by Buda Carroll Kellar who grouped the replies under twenty-two heads. This analysis is so interesting and instructive that we feel more than justified in reproducing it here:

"1. There is a large group of people who will tell you that the physician is negative. He tells you what you must not do, warns you of ensuing fatalities; the osteopath, chiropractor, does something concrete for you. The mental reaction is better.

"2. There are others who will tell you that the physician has too good a graft. He looks at you once and charges you five dollars for a prescription which he gets from a book on the shelf. You can do quite as well by going to the corner drug-store.

"3. There are those who say that doctors resent questions. They either shut you up summarily or overwhelm you by an utterly incomprehensible explanation.

"4. Others say that doctors set themselves up

as wiser, less fallible, than other people. One woman said that the last doctor she had was as pompous as a New Zealand devil dancer.

"5. It is said that doctors habitually criticize treatments and healing methods of which they know nothing. How many doctors have questioned carefully a patient who has been helped by chiropractic treatment? How many of them have even seen a treatment? Yet they criticize it, regardless.

"6. Some people said that the chiropractic schools at Davenport had really amazing equipment; and that the students there worked so hard that they must be very competent when they came out.

"7. Others say that physicians are not consistent in their ethical practices. The man who goes after business by the business method of advertising is likely to be thrown out of his society. Yet the doctor with a spectacular patient, and with enough of a graft with a city editor to exploit him, becomes a high priced specialist and everybody is anxious to call him into consultation.

"8. Numbers of people commented on the osteopathic advertisements which have been running in national magazines, and claimed to have been interested to the extent of trying out the treatments.

"9. Another group says that the doctors attitude toward one another is about as friendly as two strange bulldogs in a back yard. Suppose you dismiss one physician from a case and call another. He will come in, inspect you sorrowfully, shudder with horror as he sniffs at the bottle of medicine his predecessor left, and say in a deep voice: 'You did well to send for me; in another hour you would have been no more. But I shall cure you!'

"10. There are people who misunderstand your ethical ideals. They say that an honest man will protect a crook. That if another doctor has blundered disastrously on a case, you will do absolutely nothing to prevent his repeating the performance on any patient who may stray into the office.

"11. There are those who believe that successful doctors use for their patients parts of the very same treatments that make the practitioners successful—diet, massage, adjustment, and let nature do the work—but they drag it out longer, clutter it up with useless medicine, make it cost more, and don't tell you the truth about it.

"12. Others think that when you actually get down to cases, the doctors do the same things that they revile in their competitors. There is a famous clinic in the Middle West which is so prosperous that nobody in the profession dares criticize it. Yet they used to flood all that part of the country with the advertising literature, report has it, and later entered into a deal with a railroad to advertise the town as the home of that clinic.

"13. The cults—Science, New Thought, and a dozen others—make you a factor in your own healing. It is subjective. Medicine treats you merely as an objective—a clod of a thing to be worked upon.

"14. Another group says that doctors are always a bar to progress because they fight social legislation, such as the Shepard-Towner bill, and the only new stories to be found in the public press show their motive to be a selfish financial one.

"15. Others say that doctors won't talk competition from a fair angle. They will never admit any good in mental or related aids, and their attitude bears the stamp of a narrow outlook, because such great movements as Christian Science could not exist so long or flourish so wonderfully without a foundation of truth.

"16. The cults—and this comment was made of many—draw upon forces that are greater than man. The doctor's resources are human and mechanical!

"17. There is a large group which refuses to believe that only the doctor who has studied allopathic medicine was competent to practice the art of healing. Yet the doctors have never given the slightest degree of approval to anything which did not originate in their own ranks.

"18. Another group wondered if anyone interested in healing methods hadn't better read the expose of the medical profession recently appearing in a popular magazine. It showed how little most doctors know about the drugs they prescribed.

"19. Another group said that since doctors seem to be responsible for the vast group of drug addicts so much discussed now, it is dangerous to let yourself be given drugs for any kind of illness, and drugless healers are therefore best.

"20. Another group says: "The last doctor I went to gave me the wrong treatment and I nearly died; I went to an osteopath, or a napropath or a chiropractor, as the case may be, and was cured!

"21. Others say that there are too many specialists. It is too expensive to be handed around from one to the other for each separate thing they think might be the matter with you. It is better to go to some one who can take care of everything at once.

"22. And, finally, there is the group that says there is no way of telling which is the good doctor and which is the bad one, and it is too dangerous to experiment with them. Osteopathy—or each man's favorite practice—can't hurt you, and has cured every difficulty so far."

In a good many states committees have been appointed by the state society, or joint committees from the state society and other organizations having to do with public health, for the purpose of conducting educational campaigns. One of the most active in this work is the State Society of Oregon under whose initiative was formed The League for the Conservation of Public Health. The objects of the League are stated in the following:

"1. To investigate, collect, prepare and disseminate all obtainable data practically touching the conservation, improvement, and protection of the public health, and put the principles of preventive medicine and surgery into general practical effect.

"2. To create Committees of Specialists to study, discuss, analyze and report on the causes and effects of the specific diseases and conditions that constitute community health problems, factory and sanitation and industrial hygiene.

"3. To publish and circulate health bulletins, leaflets, pamphlets and other appropriate literature, to educate and organize public opinion, make the important facts of hygiene household knowledge, and thereby eradicate popular errors and unsound views.

"4. To stimulate scientific research to solve the doubtful public health problems, and make known

to the public, by appropriate literature, timely lectures, and through the press, the problems and progress of scientific medicine.

"5. To promote a wider and more accurate knowledge and adoption of preventive measures in the home, school, store, factory, farm and mine.

"6. To study sympathetically and systematically from the humanitarian and utilitarian standpoint such social problems as are the cause or effect of disease.

"7. To investigate the environmental causes of disease and the most efficacious methods of prevention and treatment of communicable diseases, seek to improve living and working conditions and suggest desirable legislation to promote and protect the public health.

"8. To undertake independent and impartial sociological and experimental medical research, and comprehensive investigation into the difference between urban and rural morality, conditions affecting the various sections and localities of Oregon, including the problems of tuberculosis, malaria, cancer and pneumonia, protection of infant life and maternity, milk, food, water supply and general sanitation.

"9. To conduct a bureau of research and information which will investigate and furnish health statistics to all members, to co-operating organizations and societies, and to the press.

"10. And generally to initiate, encourage, foster, aid and promote such activities as tend to advance, conserve and protect the public health."

In California the campaign of education is conducted by the League for the Conservation of Public Health independently of the state society. A health magazine is published and a syndicated service for newspapers is conducted. Public speakers are also furnished by the League and the State Society.

In Indiana plans were quite carefully formed for conducting a campaign of education and a sum of $5,000 was appropriated by the State Society and Dr. J. N. Hurty, retiring State Health Commissioner, was chosen for Educational Secretary. The ultimate failure of Dr. Hurty to undertake the work interrupted their plans, but at the last meeting the committee recommended that the appropriation be increased to $7,000.

Other states are awakening to the opportunity that offers and to the need that exists.

The Kansas Medical Society has attempted in a half hearted way to conduct some kind of an educational campaign and perhaps a modicum of good results may be attributed to these efforts. There has been a very serious lack of organization, however, and no very definite plans have been presented. Such efforts as have been made have consisted almost entirely of public meetings of county societies. Where such meetings have been held much good has been accomplished, but they are too infrequent where they are held, and they are held in too few counties to make the impression that should be made.

If this work is to be conducted with a view to large and definite results it must be properly planned and carried out according to some definite system. There can be no doubt that more people can be reached—more positively reached—through the press than by public meetings and public speakers. That most of our newspapers are interested in such a campaign and that their columns are open to articles of general public interest, along health lines, may at least be assumed until otherwise demonstrated. In addition to a syndicate service such as the one conducted in California it might even be possible to conduct a health magazine which could be placed in the homes where it would be of greatest service.

Whatever is attempted along this line, if it is to produce any definite results, will need to be financed by the State Society. The present state of the Society's finances will not justify any extensive outlay for the purpose. Just how keenly the profession feels the inroads of the cults upon their legitimate field may possibly be estimated by the reception accorded to a proposal to increase the dues for the purpose of popular education. In Oregon the dues of the members of the State Society have been raised to twenty dollars, half of which goes to the support of the League for the Conservation of Public Health.

CHIPS

One would-be authority says, barring malformation, it is the lack of vitamin that is the cause of sterility. May be so.

The lay press announces the name of a new gas "Soporite." It puts a man to sleep for six hours. During the next war the following headlines will be seen, "Airplane Soporited the Enemy Army. Removed Their Guns and Took Them all Prisoners. No Loss of Life on Either Side." Great.

Our dietetic scientists tell us that alfalfa and clover, two legumes, stand at the head

of the vegetable list in supplying water soluble vitamin. Tomato stands third. Spinach, cabbage, turnips, carrots, timothy, potato and beet in the order given.

Our friend, Nebuchadnezzar, of whom we have an account in Daniel IV, 33, B. C. 569, knew of the vitamin in alfalfa, upon which he lived for seven years. The only unpleasant result, we are told, was that he walked on all fours, ate like an ox and his body was wet with the dew of heaven, till his hairs were grown like eagle's feathers, and his nails like bird's claws. The lessons we learn from our old friend are: 1st. He knew vitamin thirty centuries ago. 2nd. Although he was crazy, intuition stayed on the job. 3rd. That alfalfa vitamin will grow hair and feathers as well as beef steak. And last but not least if we want to grow wings eat alfalfa.

There are cannibals in the blood (phagocytes) that eat up the microbic enemies, and antidotes that neutralize the deadly poisons that may get into the blood stream. Man's conduct toward his fellow man is copied from the phagocytes and antidotes in protecting himself from his fellow man.

"Microbes over two thousand years old have been found on papyrus of the times of the Ptolemies. They were found to be virile and quick to multiply when sown on gelatin." These bugs are like the dog. They don't care for time.

Hippocrates had an inkling of endocrinology. He defined health physiologically as a condition in which "each humor is in due proportion of quantity and force, but especially properly commingled." The human body is thought to be physiologically normal, now, when "it is useful, efficient, and harmonious in its production of energy."

The scientific naming of a disease begins when from a great number of experiences, one general conception or conclusion is formed which will embrace all similar cases. Aristotle modernized.

Lamarck, the great French Zoologist, 1744-1829, taught that all forms of life whatsoever are modified descendants of an original organism. Hence from lowest to highest, there is but one race, one species, just as all the multitudinous branches and twigs from one root are but one true.

He explicity formulated the idea of the transmutation of species. The changes have been wrought, he said, through the unceasing efforts of each organism to meet the needs imposed upon it by its environment. Constant striving means the constant use of certain organs. It was in 1802 that Lamarck suggested the word Biology as an appropriate word to express the general science of living things. However, independent thinkers in different countries at the same time had used the term.

The human organism the same as all other organisms tends to increase in a geometrical ratio through successive generations and hence would soon overpopulate the earth. Nature's method of preventing such a catastrophy is to keep the organic world, animal and vegetable, in a state of perpetual carnage and strife. Individual against individual, fighting for sustenance and life.

"Automobile Riding Increasing Life an Average of Eleven Years" is the title of an article in "Science Notes" in Popular Mechanics for October, 1923. The proof of the assertion—"In 1903 there were only 10,850 automobiles manufactured and the average length of life was placed at 37.64 years. Ten years later, the production of automobiles had increased to 461,500 and life expectancy had advanced to 41.01 years. In 1922, when 2,287,000 were turned out by the factories, the average life had increased to 48.66 years. Sunshine, open air and freedom from worry (?) that results from driving on the open road, the doctors stated, caused the noticeable length of life in the last twenty years."

Opinions as to the quantity of the blood in the body vary to some degree—from 1-13 to 1-17 the weight of the body. If 1-15 the weight of the body is assumed as a fair basis and its specific gravity be placed at 1055, the total quantity of blood in a man weighing 50 kg would be 3160 c. c. or nearly 3,160,000 c. mm. If we assume that there are 5,000,000 red corpuscles in each c. mm. of blood then there should be a total of 15,800,000,000,000 red corpuscles in the blood of a man of that weight. It is generally stated that the life period of a red cell is from 3 to 4 weeks. If 30 days be assumed as its life span then about 526,700,000,000 die every day, or approximately as many red cells as are contained in 100 c. c. of blood. What disposition is made of them, what effect their demise and decomposition has on other cells of the body are subjects for interesting speculation and experiment. Miyagawa presents some very instructive suggestions in the May number of the *Japan Medical World*.

Stengel gives four classes of cases in which insulin should be used.

(1) The coma cases in which, if given early enough, insulin will give almost certain relief.

(2) The severe cases, with tendency to aci-

dosis when insulin should be begun without waiting to determine the patient's carbohydrate tolerance.

(3) The severe or mild cases that have dropped low in weight and are in a state of debility.

(4) Cases requiring operations for gangrene or for other causes, in which it is important to remove acidosis as rapidly as possible.

Idiosyncrasy to quinine may be determined by applying a drop of a 1 to 10 per cent solution of the drug to the scarified skin. The occurrence of edema with a wide zone of erythema in about five minutes indicates abnormal susceptibility. In such cases two or three grains will cause cinchonism. Among the rashes produced the majority are erythematous, but urticarial, purpuric, vesicular and bullous, have been frequently observed. Irritability of the bladder and urethra have been occasionally observed. Cases have also been reported in which hemoglobinuria could be produced at will by the administration of quinine.

It may be well to remember that leucocytosis is fairly common in pregnancy. The cell count usually runs between 11,000 and 13,000 although counts as high as 25,000 have been observed. It is perhaps more common in primipara than multipara but frequently occurs in both. Polynuclear leucocytosis has been observed in 80 per cent of certain groups of cases. After parturition the leucocytes gradually diminish and reach the normal in from four to fourteen days. It may be prolonged however in cases where there have been marked erosions or tears of the genital tract, or where there are mild disorders of the breasts, or where there has been much loss of blood.

Minaki in a study of fat embolism occurring in cases of bone injury found that in injuries to bones their fat contents greatly increased both in quantity and in the size of the flakes. The occurrence of fat embolism did not depend upon the extent of injury, number of wounds or age of animal, but upon movement of the body after being wounded. Absorption of fat began in 10 minutes after injury and reached a maximum in three hours. Fat absorbed from the fracture was transmitted partly to the lymphatics and partly to the blood vessels. *Japan Medical World.*

From experimental investigations on animals Kumira (*Japan Medical World*) came to the conclusion that the substances which are normal constituents of the cerebrospinal fluid itself, such as diastase or glucose, can be transferred from the blood into the spinal fluid, but foreign substances such as hemolysin or drugs never pass from the blood into the spinal fluid. Regardless of the amount of sodium iodid administered intravenously no trace of the drug is found in the spinal fluid. He attributes this to a specific biological function of the meningeal choroidal complex which makes a septum between blood and spinal fluid—which may be disturbed, however, or so affected by some substances such as horse serum or cobra venom, as to permit the passage of hemolysin.

Miyagawa, *Japan Medical World*, summarizes the results of his experimental investigation of the disposal of dead cells as follows: "When the component of dead cells in the living body is absorbed and enters the blood circulation, it acts directly upon the homologous cells and accelerates the formation of organ toxin which has also the action upon the homologous cells. Such a process is going on physiologically all the time. Because of this process, the physiological function of the cell receives an irritation. This irritation, co-operating with the regulative action of the nervous system enables the living body to perform the vital function in a good order. But if the irritation is too strong, or goes beyond the physiological threshold of irritation, then degeneration and necrosis result. In other words, when the necrosis of cells is abnormally violent on account of various causes, the reaction becomes pathologically great. This point of view seems to teach us that diseases induced by various causes are more equally distributed over the whole of an organ by the direct action of the resorbed component of cells or the action of organ toxin, and display their typical forms."

Williamson, *New York State Journal of Medicine*, suggests the possibility that repeated x-ray pelvic exposures of a pregnant woman might influence the lymphatic grandular tissue especially the thymus gland which is so easily influenced by x-ray in therapeutic procedures. As the thymus gland influences the future growth of the child careful follow-up observations should be made for several years.

In 1921, Dr. H. E. G. Boyle of London read a paper before the Section on Miscellaneous Topics at the annual meeting of the American Medical Association. The paper dealt, in part, with so-called improved ether—"Ethanesal." The paper was not published in The Journal A. M. A. on the ground that The Journal does not publish articles on new remedies until those products have been re-

ported on favorably by the Council on Pharmacy and Chemistry. The investigation of "Ethanesal" by Dale, Hadfield and King which makes plain the fallacy of the claims for the product, demonstrates again the advantage to the medical profession of a competent judicial body—the Council on Pharmacy and Chemistry—to investigate new additions to our materia medica. (Jr. A. M. A., Sept. 22, '23.)

Calcium chlorid seems to be of some use in the treatment of hay fever, but it must be taken in rather large doses during the whole season to be of much benefit—about 1 gm., from four to six times a day. The use of this drug in hay fever is chiefly based on the work of European investigators who have shown that the permeability of the mucous membranes and of the capillaries is decreased by the internal application of calcium chlorid. The treatment is entirely symptomatic, and no permanent relief must be expected. (Jr. A. M. A., Sept. 8, '23.)

The average systolic blood pressure in 55 full term infants following normal spontaneous labor was 43 mm., according to Reis and Chaloupka. The minimum was 32 and the maximum 58 mm. There was a daily increase until on the ninth day the average was 78 mm. In pathological labors the blood pressure was usually higher, due to increased trauma to the foetal head and in these cases the readings gradually approached normal with the clinical improvement.

In a discussion on the use and abuse of forceps (Lancet, Sept. 15) Comyns Berkeley stated that it was impossible to sterilize the vagina. It was therefore impossible to pass anything into the uterus, be it fingers, hand, or forceps without potentially infecting it; and moreover from the darkness, warmth and serum present the uterus rivalled in its ability to encourage the growth of pathogenic organisms any suitably prepared culture tube in a bacteriological laboratory.

Webb, in summing some observations on marriage, pregnancy, parturition and tuberculosis, (Lancet 9-15) makes the statement that a tuberculous woman loses nothing by marriage. It is twice as likely to improve her condition as to cause deterioration. Pregnancy and parturition are likely to make her worse—there being a 50 per cent chance of this against a 19 per cent chance for improvement. The children are seven times as likely to be tuberculous as those of healthy mothers. In regard to the husband he says; "I look upon it as certain that the husband will be infected sooner or later if not congenitally immune or with a smouldering infection of his own."

The chairman of the committee for the study of toxic effects of local anesthetics, appointed by the Therapeutic Research Committee of the Council on Pharmacy and Chemistry, publishes a preliminary report. The committee has received reports of forty-two deaths following the use of local anesthetics occurring within the last few years. These accidents have not been reported on by former committees of the Association. The deaths reported are:

Anesthetic	No.
Stovain	1
Alypin	1
Procain	3
Apothesin	4
Butyn	4
Butyn and cocain	1
Procain and cocain	10
Cocain	18
Total	42

Under the headings procain, and procain and cocain, novocain is included: one is reported as procain and the other twelve as novocain. As the five deaths following the use of butyn are the first reported, the committee is very desirous of receiving full details of other fatalities for comparison of relative toxicity. These reports should be sent to the chairman of the committee, Emil Mayer, M.D., 40 East Forty-First Street, New York City. (Jr. A. M. A., Sept. 15, '23.)

—B—

Mr. Joel A. French, of the salesforce of John T. Milliken & Company of Saint Louis, has been transferred from eastern Kansas and will hereafter cover the western Kansas territory for Milliken. Mr. French is a registered pharmacist, and has a wide circle of acquaintances in his home state.

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The present methods of administering insulin parenterally are far from satisfactory. Consequently, the earliest investigators of insulin and other pancreatic preparations attempted to secure physiologic effects by oral administration. There is evidence that slight effects may be obtained when insulin or other pancreatic preparations are introduced into the organisms by way of the mouth under certain conditions. On the whole, however, the oral administration of insulin has proven quite inefficient. Rectal administration and nasal insufflation have been tried without success. A recent study showed that pancreatic extracts taken in capsule form by the stomach was not effective in decreasing blood sugar or urinary sugar. It is desirable

to give wide publicity to the current limitations of a most promising therapy, since unscrupulous venders are already attempting to distribute just-as-good pancreatic or antidiabetic preparations that are recommended for oral use. (Jr. A. M. A., Sept. 1, '23.)

PERSONAL

Dr. Seth A. Brainard, Kirwin, has purchased the practice of Dr. F. L. Depew, Howard. Dr. Depew has opened an office in the Cowley County Bank Bldg., Winfield, for general practice.

Dr. John O. Murrin, formerly of Maryville, Mo., has located in Atchison. Dr. Murrin graduated from the University of St. Louis Medical College in 1921 and served a two year internship in St. John's Hospital, St. Louis, Mo.

Dr. Lee Cowan, formerly of Fall City, Neb., has succeeded the late Dr. E. P. Pitts of Atchison.

Dr. E. J. Briback of Atchison returned September 1, from a two months' Post Graduate course in the University of Colorado. Dr. Briback spent July and August of last year in the same University and the following four months in Vienna taking Post Graduate work in Opthalmology.

Dr. R. N. McKinney has moved from Augusta to Tonkawa, Okla.

Dr. L. R. Hillyer is leaving Eldorado on account of his brother's health. He is going to Utah and probably will locate there.

Dr. C. A. Thomas and wife and girl left for Oregon for an indefinite stay with the doctor's uncle, Dr. A. W. Cormack, Albany, Oregon.

Dr. W. D. Groff, Nortonville, has returned from a two months' vacation in California.

Dr. R. A. Taylor, Topeka, is in the hospital recovering from an appendectomy.

Dr. J. L. Lattimore, Topeka, was operated on for a suppurating appendix the last week in September.

Dr. C. W. Schwartz, Topeka, was operated on at Kansas City recently for a duodenal ulcer.

SOCIETIES

HARVEY COUNTY SOCIETY

The Harvey County Medical Society was held at Halstead. The members were entertained at dinner in the Hospital after which the following program was rendered by members of the staff: "The latest inventions in surgery, 'Plantarbursitis,'" Dr. A. E. Hertzler. "Mixed tumors of four testicles," Dr. D. R. Thomas. "The human pelican—diverticulum of the esophagus," Dr. J. D. McMillion. "Cranial and Abdominal Aereonauticspneumoperitoneum," Dr. Clyde McNeil. "Sticking the Brownies—surgical experience in Korea," Dr. J. D. Bigger. Besides the Halstead Hospital staff there were present: Drs. Max Miller, M. C. Martin, E. L. Kalbfleisch, W. F. Schroeder, J. L. Grove, R. C. Porter, J. T. and Lucena Axtell, L. T. Smith, of Newton, and Dr. Freisen of Sedgwick, Kansas. Dr. Schroeder was received into membership by transfer from Marion County. The proposition to hold a baby clinic under the auspices of the State Board of Health was approved. Adjourned.

M. C. Martin, Sec. protem.

ATCHISON COUNTY SOCIETY

Regular meeting of the Atchison County Medical Society was held September 5, in the Chamber of Commerce.

Dr. T. C. Orr of the University of Kansas Medical School read a very comprehensive and instructive paper on "Intestinal Obstruction." In treatment Dr. Orr laid stress on the value of the normal salt solutions showing by his experiments with dogs that the salt is necessary to maintain life in these cases.

Dr. G. Wilse Robinson of Kansas City, Mo., read a timely and very interesting paper on "Poliomyelitis." Both papers were freely discussed and a vote of thanks was tendered the doctors for coming so far to visit our society.

Dr. Virgil Morrison, Dr. John O. Murrin and Dr. Lee Cowan, all of Atchison, were elected to membership. Communications from Mrs. D. W. Campbell and Mrs. E. P. Pitts expressing thanks for flowers and expressions of sympathy were read and filed. Drs. R. F. Allen of Doniphan and J. E. Thompson of Huron were guests of the Society. Meeting was followed by a Smoker.

T. E. Horner, Sec'y.

BUTLER COUNTY SOCIETY

The meeting of the Butler County Medical Society held Friday, September 21, at the El Dorado Hotel, was one of the most interesting held in recent months. Dr. E. S. Edgerton, Councellor of the Sixth district, Dr. E. D. Ebright, president of the state society and Dr. J. W. Cheney, president of the Sedgwick County Society, were present from Wichita, and Dr. R. W. Moore and Dr. W.

E. Janes of Eureka. Dr. F. F. Lemon of Douglas, Dr. R. J. Cabeen of Leon, Dr. F. A. Garvin, Dr. G. A. Spray, and Dr. J. C. Bunten of Augusta; Dr. H. G. Schaumloffel, of Rosalia, attended. ElDorado physicians in attendance were Dr. F. E. Dillenbeck, Dr. W. J. Eilerts, Dr. Anna Perkins, Dr. H. M. Lyle, Dr. L. W. Fowler and Dr. J. D. Musick.

W. J. Eilerts, Sec'y.

WILSON COUNTY SOCIETY

The Wilson County Medical Society had their annual picnic meeting at Dun Station, being served a first class chicken dinner by Mr. Temple.

The following members and the wives were present: Dr. and Mrs. A. C. Flack, Wiley, Butin, Young and Duncan of Fredonia. Drs. B. P. Smith and wife, McGuire, Sharpe, McCoy, of Neodesha. Dr. Addington and wife, Altoona. Dr. Woods and wife, Dentist of Altoona, were guests.

There being no business, an enjoyable evening was spent in relaxing and doing as we pleased. A sample of more than first class whistling was given by Dr. Butin, accompanied on the piano by Mrs. Butin.

The Society suffered an irreparable loss in the death of Dr. R. K. Dodge, of Fall River, Kan., which occurred August 27th, cause, apoplexy, of two hours duration.

Next meeting at Fredonia in October.

E. C. Duncan, Sec'y.

DEATH OF DR. R. K. DODGE

Dr. R. K. Dodge, a well known physician and highly respected citizen, died August 27, 1923, at his home in Fall River, Kansas, of cerebral hemorrhage. Dr. Dodge was fifty-nine years of age. He practiced his profession in Fall River thirteen years, where by his self-sacrificing devotion to his calling, and an engaging and sympathetic personality he won a very high standing in the community and in the counsels of the medical profession. He was a member of the Wilson County Medical Society, though living in an adjoining county, and contributed much to it's success by regular attendance and sustained interest. He was also a member of the Kansas Medical Society, and the American Medical Association. A large number of the members of the Wilson County Medical Society attended the funeral which was held at Fall River, August 29, under the auspices of the Masonic Order of which the good doctor had been a consistent member for many years.

F. M. Wiley,
E. C. Duncan,
Committee.

RENO COUNTY SOCIETY

The following resolutions were adopted by the Reno County Medical Society on the death of Dr. Blasdel:

RESOLUTIONS

As we have been called upon to perform the last sad rites in case of Dr. G. A. Blasdel, it is fitting that we should express in a general way our appreciation of him as a doctor and a fellow citizen.

As a citizen and neighbor he always stood for the highest ideals of civilized life as represented by our Democratic form of government.

As a doctor he was always abreast of the times, studious, painstaking and alert to become efficient in every procedure that might benefit the sick and prevent disease. He was strictly honest, ethical and fair in his dealings with all the members of his profession.

He took a deep interest in our local, state and national medical societies, and was an untiring worker for their good.

In dealing with his patients he was conscientious, careful in diagnosis and anxious that they should get the very best treatment that approved scientific medical practice had to offer.

In view of these virtuous and good qualities, we feel that we have lost a valued member of the medical profession, and a worthy citizen and neighbor.

We would recommend that the above be spread upon the minutes of the Reno County Medical Society, and a copy be sent to his widow.

C. Klippel,
C. A. Mann,
H. M. Stewart.

SHAWNEE COUNTY SOCIETY

The regular monthly meeting of the Shawnee County Medical Society was held Monday evening, October 1, at Pelletier's Tea Room. The meeting was preceded by a dinner for the members of the Society.

Dr. H. M. Conner, formerly a practicing physician in Topeka, but now associated with the Mayo Clinic, presented a paper on "The Diagnosis of Conditions Associated With Splenomegaly."

Approximately sixty physicians attended the meeting.

Earle G. Brown, Sec'y.

GOLDEN BELT AND CENTRAL KANSAS SOCIETY

A joint meeting of the Golden Belt Medical Society and the Central Kansas Medical Society was held at Ellsworth, Thursday,

Oct. 4. The program consisted of the following:

1. Headache, by Dr. E. G. Ganoung, Salina. Discussed by Drs. Perry Lloyd, Anderson; Alfred O'Donnell, Yates; Karl A. Menninger, Beckman, Cheney, Ganoung.

2. Golden Belt business meeting held; minutes approved, bills allowed, dues announced. Place of meeting to be decided on later.

3. Paper, "Hay Fever," by Dr. Ned Cheney, Salina. Discussed by Drs. Riddell, Car, Conover, Ganoung, Fansler, Gray, Klingberg, Zerzan, Cheney.

4. Paper, "Insulin in the Treatment of Diabetes Mellitus," Dr. Carl Cramm, Russell. Discussed by Drs. Pihlblad, Moses, Heaston, Fansler, Zerzan, Harvey, Ganoung, Cramm.

5. Case presentation by Dr. W. A. Carr, Junction City. Discussed by request by Dr. Karl A. Menninger, also by Dr. Conover.

6. Dinner at the Presbyterian Church served by the Presbyterian ladies. During the course of the dinner the Golden Belt Medical Society concluded its business with votes of thanks to the Presbyterian ladies, the Ellsworth doctors, including Dr. Davis of Kanapolis, and the Central Kansas Society. Salina was selected as the place of the next meeting, defeating Topeka and Junction City.

7. With the officers of the Central Kansas Society presiding, the meeting was reopened at 7:30 in the Masonic Hall. A paper by Dr. H. St. Clair O'Donnell on Pulmonary Embolism was discussed by a great many physicians.

8. Dr. Karl A. Menninger's paper on "The Treatment of Neurotic Women," was postponed until another session.

9. Dr. C. C. Conover, of Kansas City, presented a paper illustrated with lantern slides on the Effects of Infectious Disease on the Circulatory System. This was not only a carefully prepared scientific study but contained much of practical clinical importance and value. A great deal of discussion followed. A vote of thanks was tendered Dr. Conover and the meeting adjourned.

The Northeast Kansas Medical Society will hold its regular semi-annual meeting at Topeka, Thursday, November 8.

Clinics will be held at the several hospitals in the forenoon, a luncheon will be given by the Shawnee County Medical Society at noon. A program is being arranged for the afternoon session.

DEATHS

Dr. Robert K. Dodge, Fall River, aged 59, died August 27, 1923, of cerebral hemorrhage. He was graduated from Missouri Medical College, St. Louis, in 1887. He was a member of the Kansas Medical Society.

John Milton Latta, Wichita, aged 70, died August 25, 1923, following a long illness. He was graduated from the University of Michigan Medical School, Ann Arbor, in 1883.

Hiram W. Marsh, Winfield, Kansas, aged 89, died August 27, of senility. He was graduated from the University of Michigan Medical School, Ann Arbor, in 1866.

Dr. Hugh M. Barnes, born at Blue Mound, Kan., November 16, 1877, died of nephritis at Rochester, Minn., August 30, 1923.

He was graduated from the Kansas City Medical College in 1898. He practiced his profession in Blue Mound until he entered the military service in 1918. He was made a lieutenant and stationed at Camp Beauregard, La.

After the close of his military service he moved to Colony, Kan., where he practiced until March, 1923, when he was taken to Rochester where he died.

He was a member of the Anderson County Medical Society and the Kansas Medical Society.

BOOKS

The Infant and Young Child. Its care and feeding from birth until school age. A manual for Mothers. By John Lovett Morse, M.D., Edwin T. Wyman, M.D., and Louis Webb Hill, M.D., of Harvard Medical School and Children's Hospital, Boston. 12 mo of 271 pages, illustrated. Philadelphia and London: W. B. Saunders Company, 1923. Cloth, $1.75 net.

This book has been written for mothers—to tell them how to feed and care for their children until they are six years old. The instructions are sufficiently explicit to avoid confusion. It contains a considerable amount of valuable information for a small work.

Excursions Into Medical Subjects. By John B. Deaver, M.D., Emeritus Professor of Surgery, University of Pennsylvania; Surgeon-in-Chief, Lankenau Hospital, Philadelphia; and Stanley P. Rieman, M.D., Assistant Professor of Experimental Pathology, University of Pennsylvania; Chief of the Department of Pathology and Bacteriology, Lankenau Hospital, Philadelphia. Octavo volume of 188 pages and 30 illustrations. Philadelphia and London: W. B. Saunders Company, 1923. Cloth, $4.50 net.

This is a compilation of a series of lectures delivered by Dr. Deavor at Washington University, Seattle, Washington, in the extension course for graduate physicians. The subjects

of the various lectures are: Peptic Ulcer, Jaundice, Diseases of the Bile Passages, Trials, Tribulations and Joys of a Surgeon, Some Surgical Conditions of the Intestinal Tract, The Contribution of Pasteur to Modern Surgery, Medical Education and Educators, Living Pathology.

Text-Book of Therapeutics including the Essentials of Pharmacology and Materia Medica. By A. A. Stevens, M.D., Professor of Applied Therapeutics, University of Pennsylvania, Philadelphia. Sixth edition, entirely reset. Octavo of 793 pages. Philadelphia and London: W. B. Saunders Company, 1923. Cloth, $6.25 net.

Any text book on therapeutics requires frequent revision if it is to be of any value to the practitioner. The sixth edition of Steven's work has been largely rewritten and some twenty-five new remedies have been described. His classification is convenient and practical. His descriptions are clear and concise and the therapeutic indications not so elaborate as to be confusing. Occasionally a prescription composition is suggested. It is a very convenient and serviceable book to have in one's office.

Medical State Board Questions and Answers. By R. Max Goepp, M.D., Professor of Clinical Medicine at the Philadelphia Polyclinic; Assistant Professor of Clinical Medicine, Jefferson Medical College. Fifth edition, Thoroughly Revised. Octavo volume of 731 pages. Philadelphia and London: W. B. Saunders Company, 1923. Cloth, $6.00 net.

These questions and answers were originally compiled from the questions asked by various state examining boards. To these have subsequently been added additional questions as they have appeared in the lists. The fifth edition contains a good many such additions. It is needless to say that these questions cover a pretty wide field and should be carefully studied by the candidate for a state board examination.

Practical Dietetics with Reference to Diet in Health and Disease, by Alida Frances Pattee, Graduate Department of Household Arts, State Normal School, Framingham, Mass.

The theoretical and practical side of dietetics are so treated as to insure the student's application of theory in practice. Reference to a recipe automatically calls attention to its function in nutrition. Special emphasis has been laid upon the source and value of the A, B and C vitamines and recipes in general use today. Diet in Disease has been arranged under the personal supervision of leading members of the medical profession, each giving diets used in his own highly specialized field. Particular attention has been given to this phase of dietetics. Diseases best treated by high calory, salt-free diets, etc., are especially grouped to emphasize their importance. Methods of calculating these diets are also given.

Nursery Guide for Mothers and Nurses by Louis W. Sauer, M.D., Senior attending physician, Evanston Hospital. Published by C. V. Mosby Co., St. Louis, Mo. Price, $1.25.

The author endeavors to furnish such information and instruction to mothers as required for the proper care of the infant. It includes such details in the care of the baby, its feeding and health as the mother should know.

International Clinics, a quarterly of illustrated clinical lectures and especially prepared original articles edited by Henry W. Cattell, M.D. Vol. II, Thirty-third series. Published by J. B. Lippincott Co., Philadelphia.

In this number considerable space is given to papers on Insulin in the treatment of diabetes. Papers by McPhedran, Banting, Harris, Hamburger and Petty. Tularaemia is discussed by Francis, U. S. P. H. S. One of the important subjects found in this number is Allergic diseases. Papers on electrocardiography, on blood transfusion, roentgen ray, chorea and a variety of surgical topics will be found of general interest.

Applied Psychology for Nurses by Donald A. Lavid, Assistant Professor of Psychology, University of Wyoming, etc. Published by J. B. Lippincott Co., Philadelphia.

There are four parts to this book. The first is introductory and considers what should be expected from psychology; and psychology in medicine and nursing. Part two deals with foundations. Part three discusses applications; and part four is devoted to the consideration of mental health. The book presents concisely some very important facts for the careful consideration of the nurse in training.

Recovery Record by Gerald B. Webb, M.D., and Charles T. Ryder, M.D., from the Colorado School of Tuberculosis at Colorado Springs. Published by Paul B. Hoeber, New York. Price, $2.00.

This little book is apparently written for the tuberculous convalescent. It suggests the symptoms, or modifications in symptoms, indicating recovery; and the signs of danger. About one-half of the book is made up of pulse and temperature charts which the invalid may use for his record.

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Oculists, Optometrists and Optical Firms

Epoch making acts usually are not recognized as such until long after their occurrence. As a rule, their significance is appreciated only after their effect upon subsequent events has had time to manifest itself. But it is possible that we who are at present engaged in the practice of ophthalmology may

be witnessing such an epoch making act, in the position recently taken by a well known wholesale optical house. Briefly stated, this firm has closed out all of its accounts with optometrists, and has announced that it will fill prescriptions only when they are signed by members of the medical profession. In addition, it proposes to inaugurate a campaign by means of which the public will be educated as to the differences between oculists and optometrists, and the essential limitations of the latter.

Heretofore, oculists have always been on the defensive against the attacks of the optometrists. In common with other "get knowledge quick" groups of pseudo-medical practitioners, the optometrists have been waging an offensive (in both sense of the word) campaign to obtain legal recognition in the several states of the union, and hardly a year passes without the oculists of some state being compelled to appear before its legislature to combat their activities, sometimes unfortunately to no avail. Whenever the oculists have appeared in an active capacity, it has been before some medical society or in some medical journal, informing their confreres of facts which they already know. They have been barred from the public press, partly from fear of appearing unethical, and partly because the public press, from motives of self interest, or otherwise, has refused to present their side of the question.

This anomalous position has long been recognized, and at the 1921 meeting of the American Academy of Ophthalmology and Oto-Laryngology, a Committee on Publicity and Service was appointed to consider the question of the proper method of acquainting the public with necessary medical facts. This is a step in the right direction, and if it is assisted by the action of the non-medical organizations, so much the better. The present status of refraction is an evolution from the days of the itinerant spectacle vender: but the instruction of the consumer has not kept pace with the progress of those whose duty and privilege it is to supply them with correcting lenses. Anything which tends to alter this state of affairs should be welcomed.

Another phase of this firm's action is its refusal to supply lenses to optometrists. Oculists in the smaller cities, and those in the larger ones who supply their patients with lenses thru the medium of wholesale optical houses have been forced to obtain such lenses, etc., from the same firms which supply optometrists. Not only is this true, but it is stated that some firms make a special, lower, price to optometrists, thus introducing the element of unfair competition. Optometrists are organized for action; oculists, for science. If oculists would realize what a force their united numbers could exert, by patronizing firms which cater exclusively to them, a revolution would be brought about in the attitude of other firms. They would realize that oculists would have a choice between "fair" and "unfair" firms, and many of them would undoubtedly swing into line. A decided check would be given to the activities of optometrists, for when an army is engaged in preventing the turning of its flank, it has little leisure for aggressive action. When a firm states by words and acts that it does not desire the accounts of a certain group of men, such action exerts a moral force beyond its immediate and direct results. In defending themselves from the implications produced, optometrists will hardly have time to attempt new inroads on the medical profession.—C. L. (American Journal of Ophthalmology.)

Spontaneous Attack of Tetany During Hyperpnea in a Case of Epidemic Encephalitis

This curious observation is recorded by L. F. Parker and T. P. Sprunt (Endocrinology, January, 1922). A boy, aged 18 years, during convalescence from a delirious type of epidemic encephalitis, developed attacks of petit mal type and periods of forced breathing, during one of which was a typical acute attack of tetany, lasting twenty minutes. There was bilateral carpal spasm, and Chvostek's sign was strongly positive. According to the authors, this attack of tetany would have been difficult to understand had it not been for the recent experimental physiologic studies of Collip and Backus (Am. Jour. Physiol., April, 1920) and of Grant and Goldman (Am. Journ. Physiol., June, 1920). These observers showed that tetany regularly occurs as a feature of voluntary, prolonged hyperpnea; probably as a result of disturbed acid-base equilibrium in the body. Their explanation is that the deep breathing washes out the carbon dioxid and disturbs the ratio between the carbon acid and the sodium bicarbonate on which the hydrogen-ion concentration of the blood depends. A relative alkalosis develops, and, at the same time, there is a reduction of the alkaline reserve owing to elimination of the sodium bicarbonate from the body fluid in the effort to maintain constant hydrogen-ion concentration. Other observers have previously noted in parathyroidectomized dogs a period of alkalosis just prior to attacks of tetany and that injections of acid, or of calcium salts, relieved the tetany. There are also reports of tetany following the administration

of sodium bicarbonate, and in ammonia poisoning. The authors remark that it is difficult to bring the hyperpnea experiments of the physiologists and cases such as the one here reported into relationship with parathyroid deficiency. The latter possibly may ultimately bring about a disturbance of acid-base equilibrium in the body and hence produce tetany. (*Nerv. and Ment. Dis., Year Book*, 1922, *Bassoe, p.* 237.)

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Tapeworm Remedies

Oleoresin of aspidium and pelletierin tannate are the remedies of choice, the first being more popular. To give the remedies the best chance for action, the intestinal contents should be reduced as much as possible by restriction of solid food and evacuation before the treatment. On the morning of the treatment the patient should stay in bed and be given from 6 to 8 gm. of oleoresin of aspidium divided into as many capsules in the course of 10 to 15 minutes. Two hours later a saline cathartic should be administered and repeated every two hours until thorough evacuation has been secured. (Jr. A. M. A., Aug. 11, '23.)

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The Influence of Heredity on the Occurrence of Cancer

The coincident development of the sciences of genetics and experimental cancer research, according to H. Gideon Wells, Chicago (Journal A. M. A., Sept. 22, 1923), has begun to yield evidence bearing on the relation of hereditary influences to cancer occurrence. Human statistical evidence is not of sufficient accuracy or extent to render it of any value in the study of this subject. The occurrence of cancer families is unquestionable, but of doubtful value because of the possibility that such occurrences may depend solely on chance. Family occurrence of rare neoplasms, such as glioma of the retina, multiple neurofibromatosis, and multiple cartilagenous exostoses, cannot be dismissed as depending on chance. Human evidence being inadequate, we are compelled to rely on evidence from observations on animals. It is known that the principles of inheritance are the same in all species of animals as well as in plants, and that cancer, in its fundamental respects, is the same in man as in other mammals; therefore the drawing of conclusions in respect to heredity and human cancer from observations on experimental animals is justifiable. Such observations have shown repeatedly that an important element in the occurrence of spontaneous tumors in animals is determined by the heredity of the animals under study. Maud Slye has produced, solely through breeding, strains of mice that have never developed tumors in twenty and more generations, strains of mice in which the natural death of the adults is by cancer, and strains with less degrees of frequency of cancer occurring according to the mendelian expectation. In these animals the capacity to resist cancer behaves as a dominant character, the susceptibility to cancer as a recessive. There is evidence available which supports the inference that in man also the susceptibility to cancer behaves as an inherited recessive character.

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Iodin as a Prophylactic for Goiter

The conclusion of Marine and Kimball that the administration of iodin constitutes an efficient and safe method of preventing goiter is being amply confirmed. In Switzerland the results appear even more favorable than those reported in this country and the goiter commission of Switzerland has recommended that this method of goiter prevention be instituted as a public health measure throughout the republic. In this country the schools of Akron, Kent and Revana counties, in Ohio, have been using the method as a routine. It has been employed in Berea and Warren, Ohio, and extensively administered in some of the large factories in Cleveland. This year the schools in East Cleveland, Shaker Heights, Warren, Niles and Findlay, Ohio, Grand Rapids, Mich., and Hammond, Ind., are using tablets, each containing 10 mg. of iodin in the form of an organic iodid and each girl takes one tablet a week throughout the year. (Jr. A. M. A., Aug. 18, '23.)

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The Midwife Problem in the United States

While existing legislation gives the midwife recognition but controls her ineffectually, if at all, Anna E. Rude, Washington, D. C. (Journal A. M. A., Sept. 22, 1923), states that the problem still to be solved is whether adequate provision shall be made for medical attendance at every confinement and the midwife abolished, or whether midwives shall be trained and practice under strict supervision and control. Obviously, there is no point in eliminating even the untrained midwife without making qualified substitutes available. With one third of the states already undertaking the supervision and training of the midwife, perhaps one may conclude that from the point of view of the public health administrator, control at least is at present a necessity. Whether or not uniformity of regulation, training and supervision on a national scale similar to that of most foreign countries is feasible or desirable is a problem suggested for future consideration.

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For the prophylaxis of goiter, Marine and Kimble employed 2 gm. of sodium iodid given in 0.2 gm. doses daily for ten consecutive school days. This was repeated twice yearly. Marine and Kimball state that this amount of iodid is excessive and that 1 gm. of sodium iodid distributed over a longer period would be better. Sodium iodid may be prescribed in solution, a dose to a teaspoonful. If the patient be furnished with a small quantity of potassium iodid—say 1 gm.—and advised to mix it thoroughly with 1 kg. of ordinary table salt for occasional seasoning of his food at the table, he will get all the iodid that is necessary for prophylactic purposes and in an entirely unobjectionable manner. (Jr. A. M. A., Aug. 18, '23.)

Radiologic Gastro-Intestinal Studies in Epilepsy

The main point emphasized by Ward W. Harryman and Sam W. Donaldson, Ann Arbor, Mich. (Journal A. M. A., Sept. 8, 1923), is that in a considerable number of epileptics there is hypermotility of the colon, and in some, hypermotility of both cecum and colon. No definite evidence of colonic stasis is found. The term "constipation" is a complaint of the patient and associated with a cathartic habit. It does not indicate colonic stasis. There are no indications for surgical procedure to relieve these patients of colonic stasis, since a true colonic stasis does not exist.

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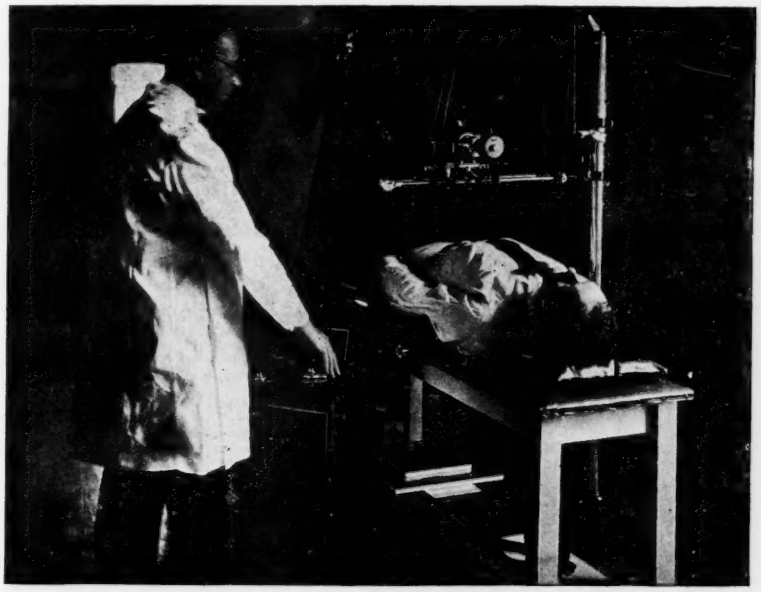

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Secretary.....J. F. HASSIG, M.D.....Kansas City Treasurer.....GEO. M. GRAY.....Kansas City

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Committee on Public Policy and Legislation—Dr. W. S. Lindsay, Chairman, Topeka; Dr. C. S. Huffman, Columbus; Dr. J. A. Milligan, Garnett; Dr. M. L. Perry, President ex-officio; Dr. J. F. Hassig, Secretary ex-officio.

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Committee on Scientific Work—Dr. J. F. Hassig, Chairman, Kansas City; Dr. H. L. Chambers, Lawrence; Dr. F. A. Carmichale, Osawatomie.

Committee on School of Medicine—Dr. C. Nesselrode, Chairman, Kansas City; Dr. Harry W. Horn, Wichita; Dr. Alfred O'Donnel, Ellsworth; Dr. Frank A. Trump, Ottawa; Dr. J. J. Brownlee, Hutchinson.

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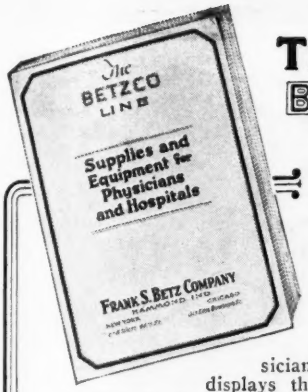
Members of Component County Societies are members of the Kansas Medical Society. Physicians residing in counties where no County Society exists may join the society of an adjoining county. Physicians residing where no county society exists, who are members of a district or other independent society approved by the Council, may be admitted to membership.

ANNUAL DUES $3.00, due on or before February 1st of each year.

Dues should be paid to the Secretary of the Component County Society, or, if not a member of a County Society, to the Secretary of the Kansas Medical Society.

OFFICERS FOR 1923

COUNTY	PRESIDENT	SECRETARY	
Allen	W. R. Heylmun, Iola	P. S. Mitchel, Iola	
Anderson	T. A. Hood, Garnett	J. A. Milligan, Garnett	2d Wednesday
Atchison	C. W. Robinson, Atchison	T. E. Horner, Atchison	1st Wed. ex. July and August
Barton	B. S. Pennington, Hoisington	L. J. Wheeler, Great Bend	1st Tues., Jan., Apr., June, Oct.
Bourbon	R. Afleman, Ft. Scott	W. T. Wilkening, Ft. Scott	2d Monday
Brown	E. J. Leigh, Hiawatha	J. M. Robinson, Hiawatha	2d Friday
Butler	F. A. Garvin, Agusta	W. J. Ellerts, ElDorado	2d Friday
Central Kansas	D. R. Stoner, Ellis	L. V. Turgeon, Wilson	
Chautauqua	W. T. Courtwright, Sedan	W. L. McNaughton, Sedan	
Cherokee	R. C. Lowdermilk Galena	J. D. Graham, Columbus	2d Monday
Clay	C. E. Earnest, Clay Center	R. J. Morton, Clay Center	2d Wednesday
Cloud	C. W. Caton, Concordia	Ross E. Weaver, Concordia	Last Thursday
Coffey	J. C. Fear, Waverly	A. B. McConnell, Burlington	
Cowley	C. R. Spain, Arkansas City	M. M. Miller, Ark. City	1st Tues. ex. July, Aug., Sept.
Crawford	M. K. Scott, Frontenac	H. L. Church, Pittsburg	3d Thursday
Dickinson	H. R. Turner, Hope	E. J. Reichley, Herington	
Doniphan	W. W. Carter, Wathena	W. M. Boone, Highland	1st Tues., Ja., April, July Oct.
Douglas	H. L. Chambers, Lawrence	H. T. Jones, Lawrence	1st Thursday
Elk	R. C. Hanner, Howard	F. L. DePew, Howard	Called
Finney	A. L. Brown, Garden City	Chas. Rewerts	
Ford	T. L. McCarty, Dodge City	W. F. Pine, Dodge City	Last Wednesday
Franklin	F. C. Herr, Ottawa	G. C. Mahaffy, Ottawa	
Harper	A. E. Walker, Anthony	H. W. Gaume, Harper	3d Wednes. Mar., June, Sept., Dec.
Harvey	M. C. Martin, Newton	F. L. Abbey, Newton	First Monday
Jackson	J. B. Smythe, Holton	C. A. Wyatt, Holton	1st Wednes. Jan., Apr., July, Oct.
Jewell	J. E. Hawley, Burr Oak	L. V. Hill, Randall	
Johnson	F. F. Green, Olathe	J. T. Orr, Olathe	
Kingman	R. W. Springer, Kingman	A. M. Dick, Kingman	2d Thurs. ex. Summer months
Labette	E. E. Liggett, Oswego	J. D. Pace, Parsons	4th Wednesday
Leavenworth	F. J. Haas, Leavenworth	J. L. Everhardy, Leavenworth	2d and 4th Mondays
Lincoln	A. M. Townsdin, Barnard	Malcolm Newlon, Lincoln	2d Thursday
Linn	J. R. Shumway, Pleasanton	W. P. Irwin, Pleasanton	2d and 4th Fridays
Lyon	O. J. Corbett, Emporia	M. T. Capps, Emporia	1st Tuesday
Marion	W. E. Stone, Florence	J. J. Entz, Marion	2d Wednesday each month
Marshall		J. L. Eddy, Marysville	Last Thurs. July, Oct., Jan., April
Meade-Seward	F. W. Huddleston, Liberal	J. W. Messersmith, Liberal	
Miami	F. A. Carmichael, Osawatomie	A. G. Dumas, Osawatomie	Last Friday
Mitchell		E. E. Brewer, Beloit	
Montgomery	D. W. Howell, Caney	J. A. Pinkston, Independence	2d Friday
McPherson	P. W. Backman, Lindsborg	Frank Oberg, Marquette	
Nemaha	W. R. Dillingham, Sabetha	S. Murdock, Sabetha	Last Thursday every other month
Neosho	L. D. Johnson, Chanute	E. R. Furgason, Chanute	Second Monday
Norton-Decatur	H. O. Hardesty, Jennings	C. S. Kenney, Norton	Called
Osborne	J. E. Henshall, Osborne	S. J. Schwaup, Osborne	
Pawnee		E. A. Reed, Larned	Second Tuesday
Pratt	W. H. Maness, Preston	C. E. Martin, Cullison	First Monday
Reno	G. A. Blasdel, Hutchinson	C. D. McKeown, Hutchinson	th Friday
Republic	J. W. West, Narka	H. D. Thomas, Belleville	d Thursday in November
Rice	L. E. Vermillion, Lyons	J. H. Powers, Little River	ast Thursday
Riley	J. D. Colt, Jr., Manhattan	J. W. Evans, Manhattan	d Monday
Rush-Ness	N. W. Robinson, Bison	L. A. Latimer, Alexander	Called
Saline	A. L. Cludas, Minneapolis	R. E. Cheney, Salina	d Thursday
Sedgwick	J. W. Cheney, Wichita	W. G. Gillett	1st and 3d Tuesdays
Shawnee	H. B. Hogeboom, Topeka	E. G. Brown, Topeka	1st Monday
Smith		V. E. Watts, Smith Center	alled
Stafford	I. M. Hart, Macksville	J. T. Scott, St. John	d Wednesday
Sumner	H. G. Shelley, Mulvane	T. H. Jamieson, Wellington	ast Thursday every quarter
Washington	I. D. Smith, Washington	W. M. Earnest, Washington	
Wilson	D. D. Sharpe, Neodesha	E. C. Duncan, Fredonia	d Tues. Dec., March, June, Sept.
Woodson	I. S. Reynolds, Yates Center	O. E. Robinson, Yates Center	
Wyandotte	J. A. Jones, Kansas City	L. B. Spake, Kansas City	very 2d Tues. ex Summer months



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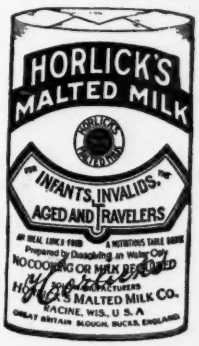

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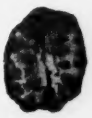

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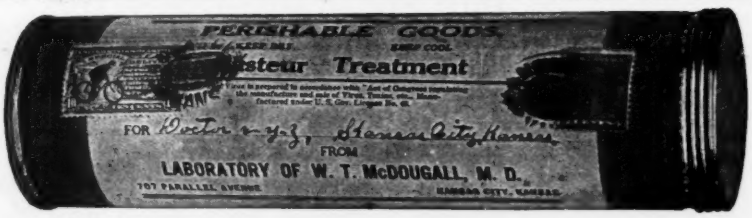

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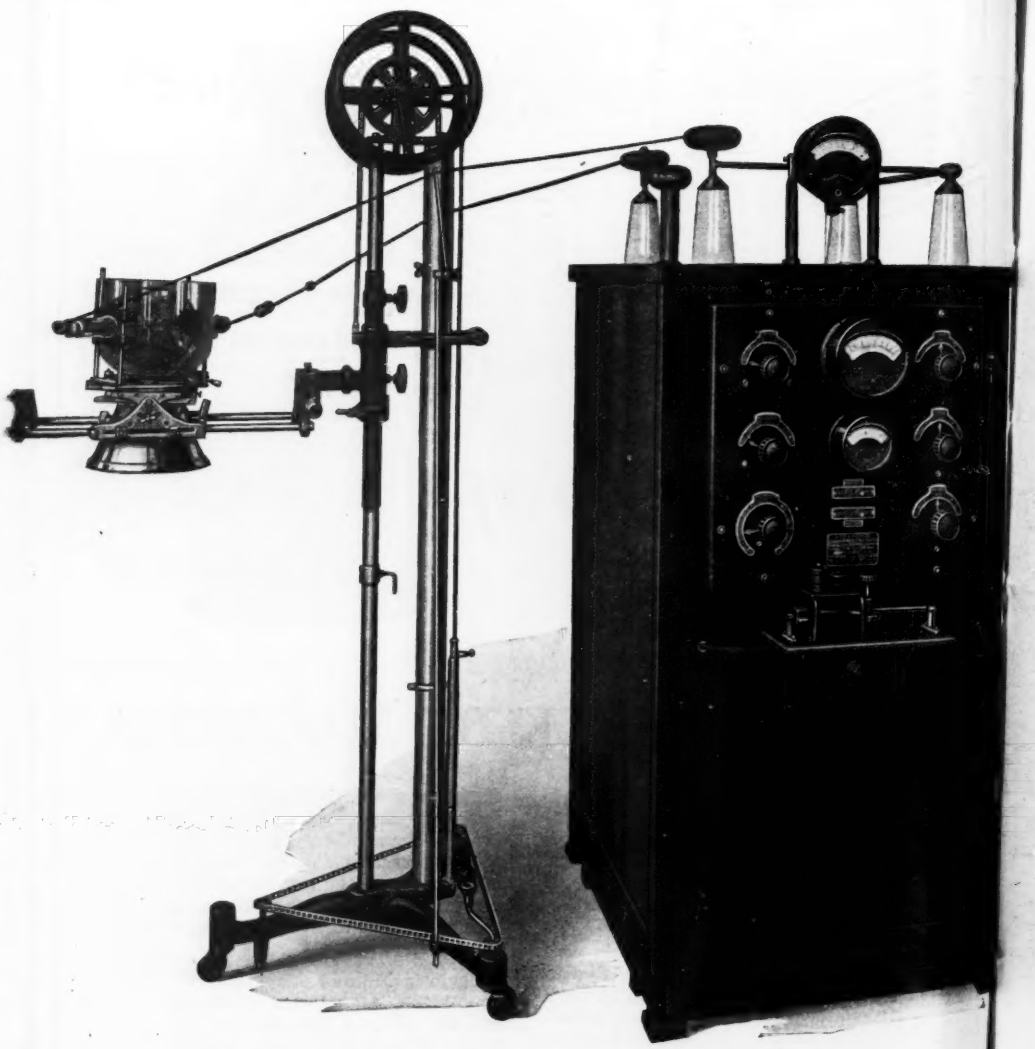

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